Re-evaluation and Trend Analysis of Western Pearlshell Mussel (SWG Tier 1) Populations across Watersheds of Western Montana

Report of State Wildlife Grant (SWG) FY2015 Activities to
Montana Fish, Wildlife and Parks
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Prepared by:
David M. Stagliano
MNHP Aquatic Ecologist
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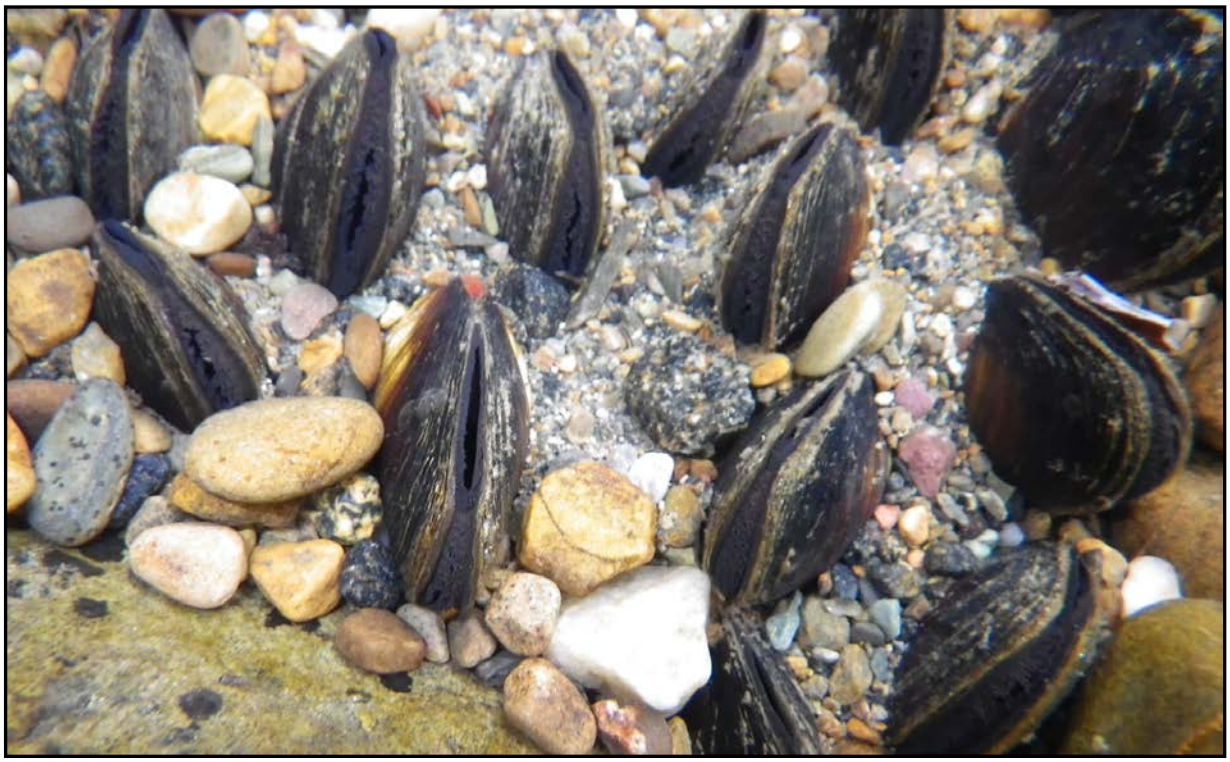

Western pearlshell mussels in the Yaak River

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All photos in the report were taken by MTNHP personnel, unless otherwise noted

Introduction

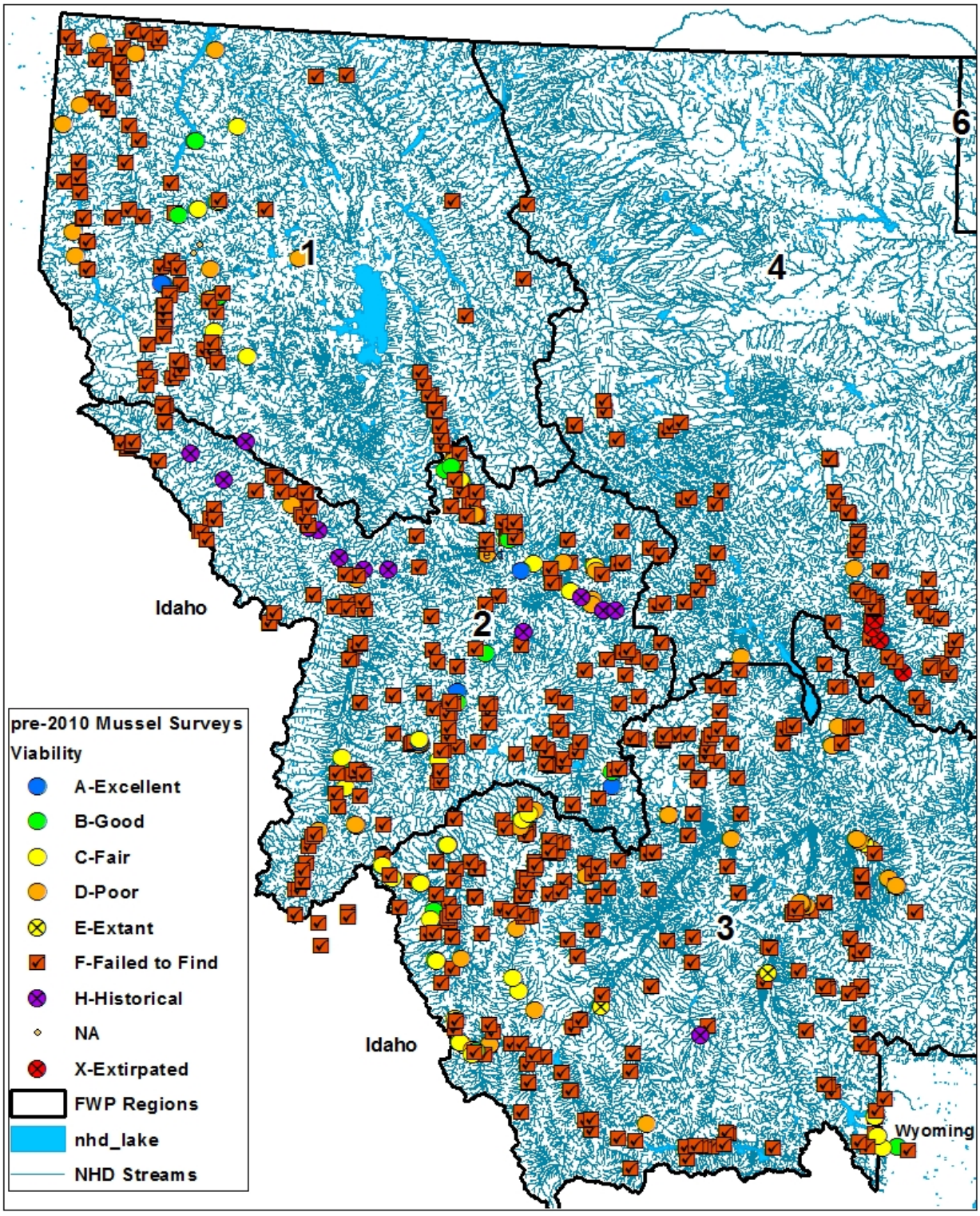
The western pearlshell mussel (WEPE), *Margaritifera falcata* has experienced significant statewide range reductions in the last 100 years and is now known from ~85 populations, of which, only ~20 are expected to be viable 100 years from now (Map 1, Stagliano 2010). In the short-term, many of these remaining populations are at risk of extirpation due to stochastic events able to wipe out these small isolated populations, and in the long-term, they are at risk from the lack of reproduction with non-native salmonid host species or climate change (Hastie et al. 2003). Most literature describes the spatial distribution of mussels in the context of large aggregations of relatively dense individuals commonly referred to as mussel beds. However, the current populations of WEPE in most Montana river systems do not exhibit this pattern of distribution; instead, mussels tend to occur in smaller patches (<50 individuals) that appear to be haphazardly distributed (randomized-clumped) within suitable stream microhabitats. This complicates efforts to document new populations in watersheds known to contain WEPE occurrences. Recent survey attempts to locate new WEPE populations in 25 previously un-surveyed stream reaches of the Madison and other upper Missouri River basins have yielded negative results (Stagliano 2013a). Three small WEPE populations that we have resurveyed since 2007 are now documented to be extirpated, and two others are on the verge of disappearing. More discouraging were our findings in 2012 that two WEPE populations in the Clearwater River previously thought to be the most abundant in the state were not able to provide the requisite number of individuals (n = 500) for a relocation project (Stagliano 2013b).

The long-term declining status of the WEPE has led to its designation as the only Tier 1 invertebrate species in the State Wildlife Action Plan (MFWP 2014), a Species of Concern by the State of Montana (MTNHP 2008) and a Sensitive Species by the U.S. Forest Service Region 1 (USFS 2011). Further declines may upgrade the WEPE's Nature Serve conservation status in the state from imperiled (S2) to critically imperiled (S1). Therefore, the main objective of this project is to resurvey a significant subset (at least 90%) of the documented WEPE populations in Montana to determine current statewide population numbers, viability and short-term trends. A secondary objective is to search for new populations and refine the distributional boundaries of existing populations.

Study Sites

Beginning in 2004 and continuing to 2012, we documented 88 distinct WEPE populations (153 population segments) and viability on 78 streams within western Montana (Map 1). We revisited

Map 1. Western Pearlshell sites and population viability compiled for 2010.



approximately 90% of these sites in 2014 using the same standardized field survey methods for WEPE population assessments (Stagliano 2010). At least four streams on the CSKT reservation (Lower Flathead 17010212) have been reported to have WEPE populations, but we have not visited these populations due to access and collection permit issues. Time-lapsed since the initial

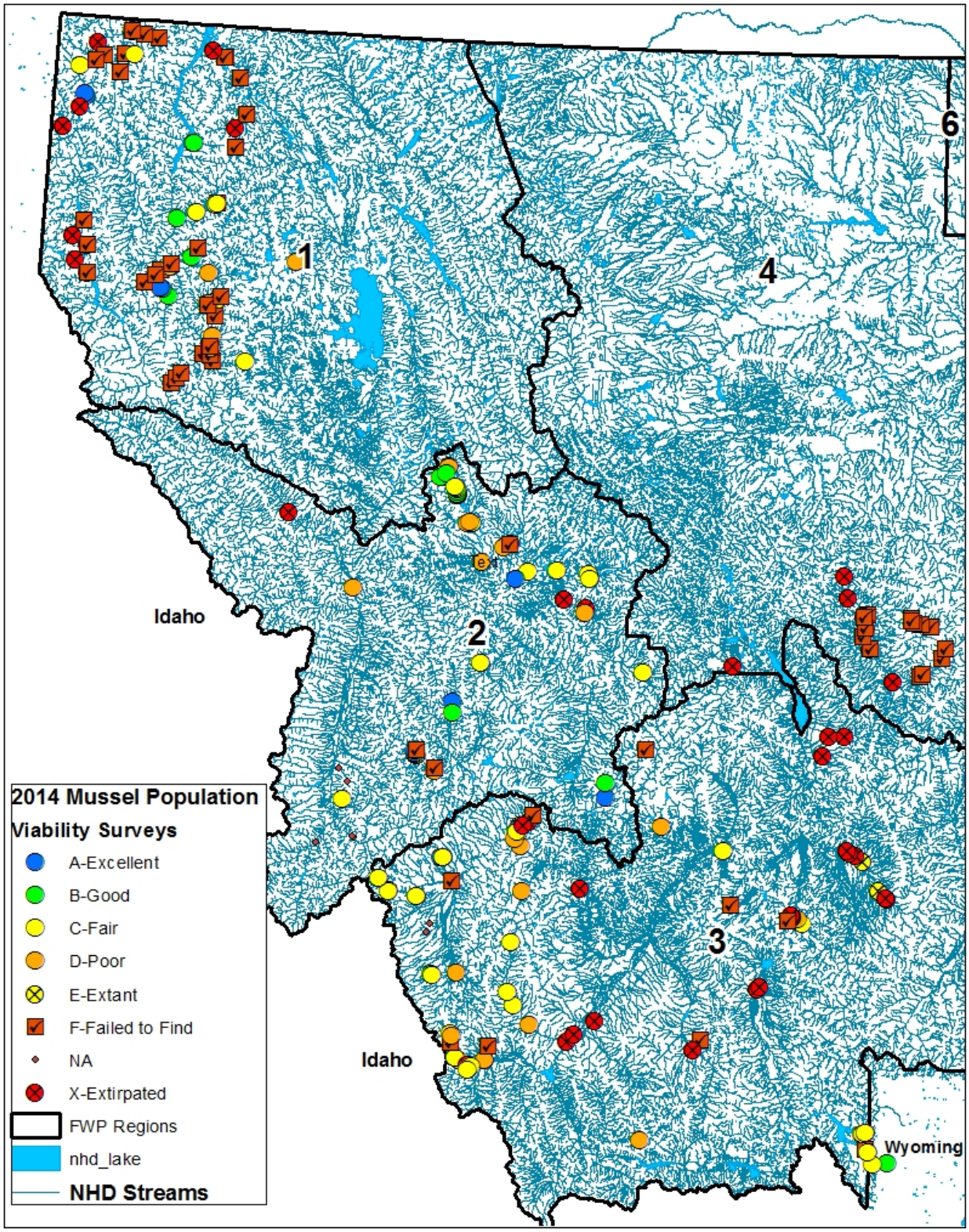
surveys was an important deciding factor in choosing priority sites, since the first detection of some of Montana's WEPE populations (2004) was approaching 10 years.

Methods

WEPE populations visited by the author in the last two years were excluded from 2014 resurveys, but included in the analysis. Incidental mussel records reported to MTNHP that were not revisited using the standardized mussel survey protocol were not included in population analysis, but provide documentation of continued existence in a stream (e.g. Bitterroot River, Schmetterling 2012, unpublished data). Initial survey start and end points were recorded with a Garmin 60s GPS handheld unit, so site location and effort was replicated during the revisit. If we failed to detect mussels in any previously documented WEPE populations within the reach during this revisit, additional search effort was conducted downstream of the starting point (at least 100 m), as some WEPE populations may have had individuals shifted along the stream channel from the high stream flows experienced state-wide in 2011 (personal observation, Stagliano 2012). We considered a previously documented population absent (extirpated from the reach, X) only after this additional search effort was conducted and no evidence of mussels was discovered. Population viability ranking (A-F: A-Excellent Viability to F-Failed to find) followed the same Nature Serve criteria used in the initial rank process (Hammerson et al. 2008, Stagliano 2010). Populations within a stream reach were lumped into a single metapopulation, if there is < 2 km of suitable habitat separation between clumps of individuals (based on NatureServe mussel EO criteria) (NatureServe 2014). Changes or stability in viability across populations was evaluated in a pair-wise trend detection analysis to determine if localized declining trends are also occurring on a statewide basis.

Data analysis included a hierarchical pair-wise evaluation of the change in total number of WEPE occupied 4^{th} code HUC watersheds (ΔW), the number of streams or sites where WEPE populations were detected (ΔS), as well as the individuals within populations and viability (ΔP / ΔV) between initial survey (Pre-2010) and current survey (2014). This data was analyzed using a one-tailed, paired Student T-Test to determine if differences were significant. Directional trends where considered significant statewide. We are currently investigating the use of Bayesian statistics to analyze the population trend data, but this is not presented here in this draft report. New short-term population trend data was incorporated into the Nature Serve ranking process to provide an updated state rank of the WEPE. Significant short term and non-cyclic negative trends have raised conservation priority status by one-quarter rank or more (Master et al. 2003).

Map 2. Western Pearlshell new sites, revisits and population viability compiled for 2014.



Results

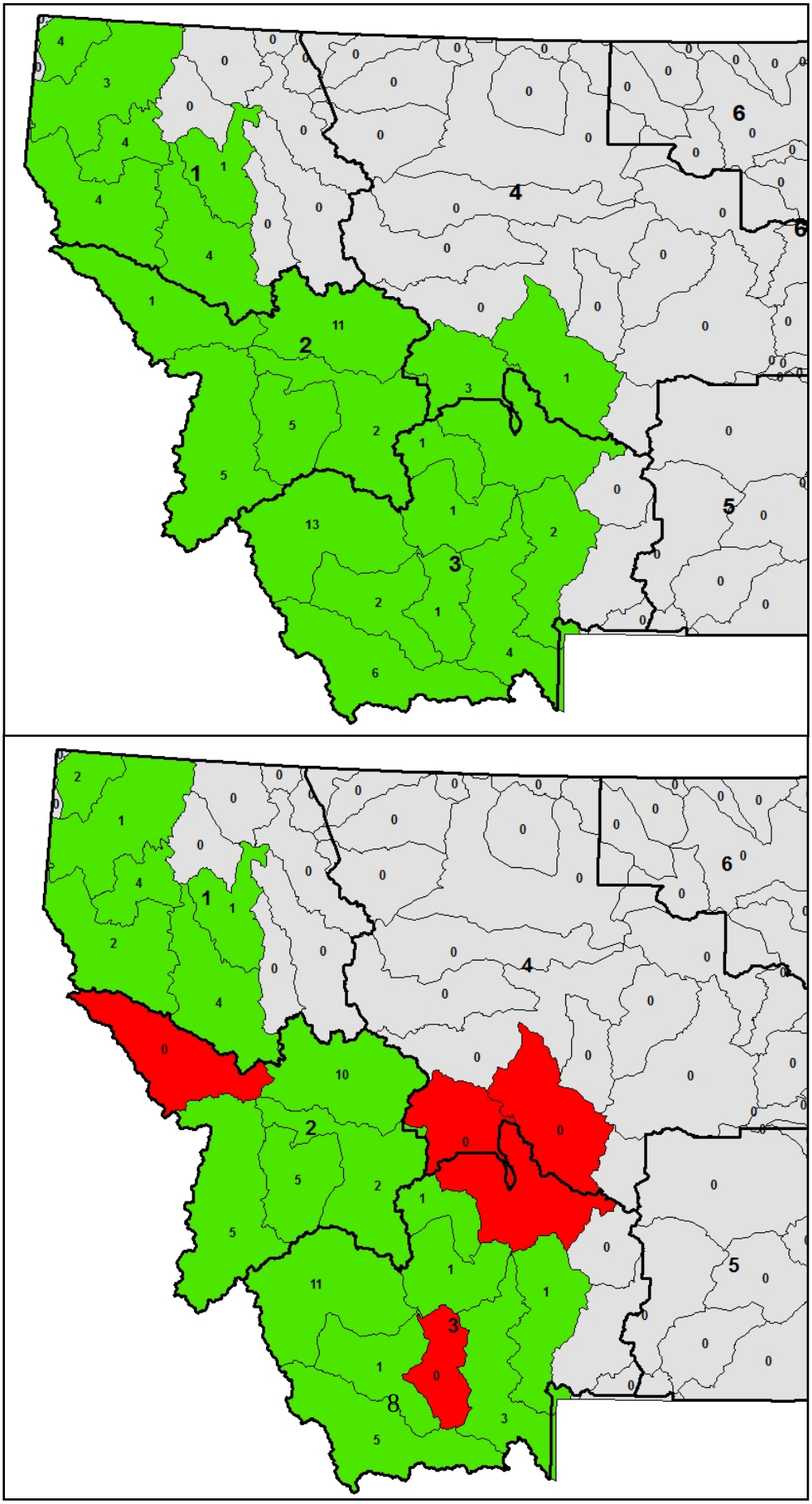
We resurveyed 69 of the 74 previously surveyed streams with WEPE populations in the state. From these revisits, 19 streams (25%) are now considered to be extirpated (X) (Table 1, Figure 1). All of these now extirpated streams consisted of a single D or E non-viable population. Five streams containing 10 WEPE populations in the Bitterroot River Watershed (17010205) were not re-visited during this study, though a non-viable population in the lower Bitterroot River has been documented to be extant. We performed standardized surveys on 53 new stream sections or visited sections that we previously failed to find mussels, 13 of these sites yielded populations, including A-viable population extensions for the Yaak River, Deep Creek and Pleasant Valley Fisher River (Appendix B). We were also able to verify the A-viability of the Wales Creek population in the Blackfoot watershed. The number of streams per 4th code HUC with WEPE populations in 2014 is significantly lower (Student's paired T-Test, $p < 0.0001$) than in pre-2010

Table 1. Western pearlshell population metrics reported from pre-2010 and 2014. Δ = % change. P-value of T-Test significant at $p < 0.05$.

	Pre-2010	2014	# revisited	Δ	Trend	p-value
4th code HUC	21	17	19	20%	**(-)**	0.02
Streams	78	55	69	26%	**(-)**	< 0.0001
Metapopulations	88	67	78	14%	**(-)**	0.0001
Populations	153	122	140	19%	**(-)**	0.0001
A-Excellent Pop.	13	12	13	8%	**(-)**	0.33
B-Good Pop.	26	23	23	12%	**(-)**	0.08
C-Fair Pop.	49	58	44	18%	**(+)**	0.003
D-Poor Pop.	66	29	65	57%	**(-)**	< 0.0001
E-Extant Pop.	5	0	5	100%	**(-)**	*na*
X-Extirpated Pop.	5	42	5	740%	**(+)**	< 0.0001
# Individuals	8,055	5,912	*na*	27%	**(-)**	0.0008

(Table 1). WEPE occupied streams in 13 of 21 watersheds (65%) are on a negative trend (Table 2, Figure 2). The highest number of recently documented extirpations (6 pops. of D-viability) was located within the Smith (10030103) and Missouri River (10030101) watersheds (Figure 1). These two watersheds are now listed as having extirpated or historical distributions only. Two other 4th code watersheds (Ruby River and Middle Clark Fork) reporting "extant" populations in 2007 are now considered extirpated (Table 1, Figure 1). A total of 32 D-viablity populations visited in 2014 are now considered extirpated (X), while six 2007 D-viable populations improved to C-viability (Table 1). C-Fair and E-Extirpated populations were the only significant positive

Figure 1. Western pearlshell watershed presence (green) and absence (red) pre-2010 (top) and 2014 (bottom). Numbers in HUCs are WEPE occupied streams. FWP regions outlined.

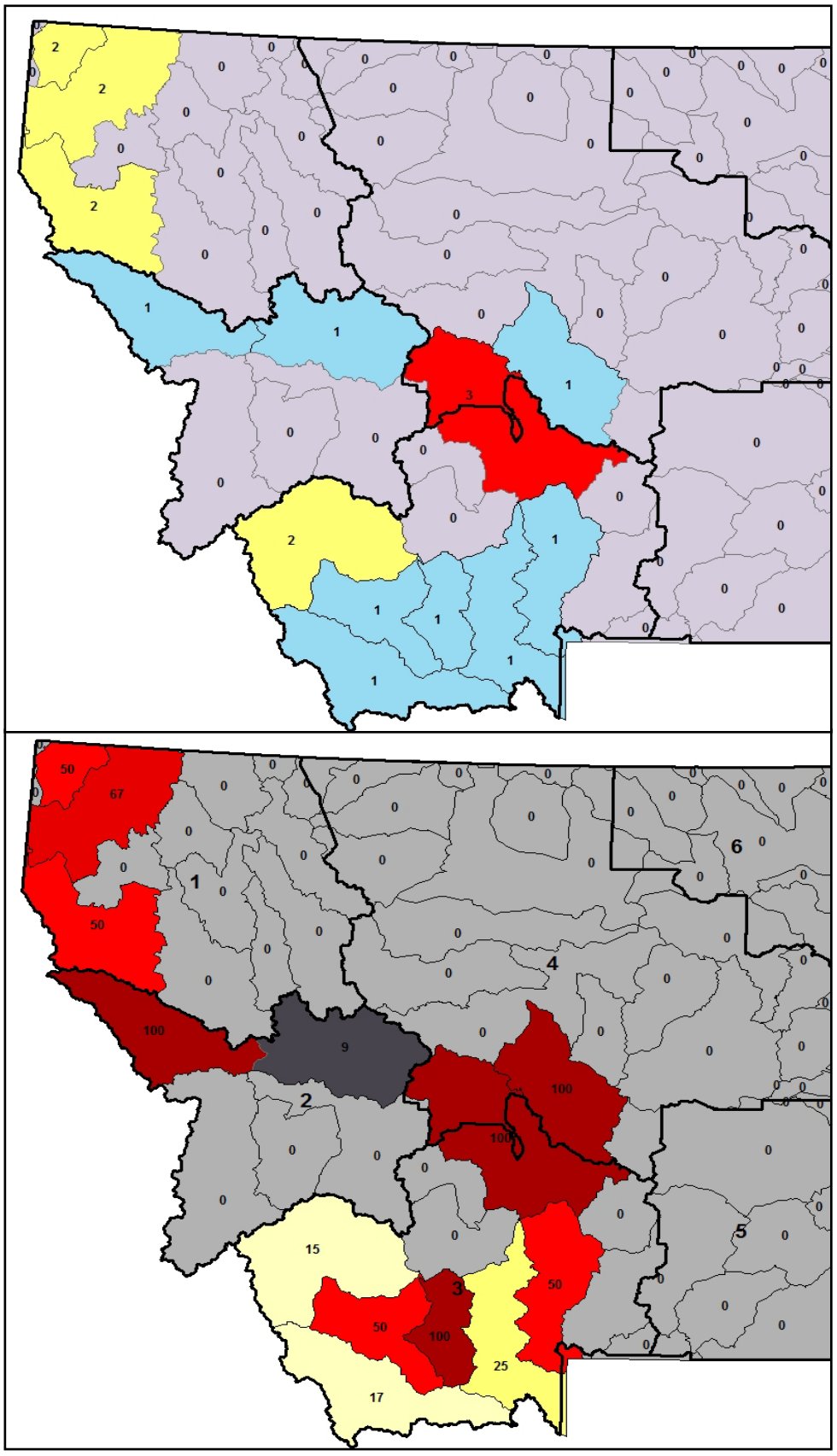


trends reported in the analysis (Table 1). In contrast, two F populations became D populations since 2010. All 19 4th code watersheds visited during the study had at least one population of WEPE experience some degree of decline (Appendix A). Overall, 12 populations declined by at least a viability rank, while seven increased by a viability rank. Seven populations that were ranked viable (B) prior to 2010 are now ranked non-viable (C/D), due to loss of individuals and a lack of reproduction (Appendix B). 2014 surveys added three new viable population extensions to existing WEPE streams (Yaak River, Wales Creek and Deep Creek of the Big Hole).

Table 2. Western Pearlshell occupied streams and trends by 4th code HUC.
*HUCs not visited in 2014, but evidence does not support WEPE stream loss.

4th code HUC	Name	Pre-2010	2014	% Δ by HUC	Trend
10020004	Big Hole	13	11	15.4	**(-)**
17010203	Blackfoot	11	10	9.1	**(-)**
10020001	Red Rock	6	5	16.7	**(-)**
17010205	Bitterroot*	5	5	0.0	**(=)**
17010202	Flint - Rock	5	5	0.0	**(=)**
17010102	Fisher	4	4	0.0	**(=)**
17010212	Lower Flathead*	4	4	0.0	**(=)**
10020007	Madison	4	3	25.0	**(-)**
17010103	Yaak	4	2	50.0	**(-)**
17010213	Lower Clark Fork	4	2	50.0	**(-)**
17010101	Upper Kootenai	3	1	66.7	**(-)**
10030101	Missouri	3	0	100.0	**(-)**
17010201	Upper Clark Fork	2	2	0.0	**(=)**
10020002	Beaverhead	2	1	50.0	**(-)**
10020008	Gallatin	2	1	50.0	**(-)**
10020005	Jefferson	1	1	0.0	**(=)**
10020006	Boulder	1	1	0.0	**(=)**
17010208	Flathead Lake	1	1	0.0	**(=)**
17010204	Middle Clark Fork	1	0	100.0	**(-)**
10020003	Ruby	1	0	100.0	**(-)**
10030103	Smith	1	0	100.0	**(-)**
	Total WEPE Streams	**78**	**55**	**25.0**	**(-)**
	Total WEPE HUCs	**21**	**17**	**20.0**	**(-)**

Figure 2. Western pearlshell population loss by number of streams in HUC (top) and percent of stream loss (bottom) by watershed HUC. FWP regions outlined.



The WEPE populations in the Yaak River (17010103) above Yaak falls are now documented to be the most viable and contain the highest estimated number of individuals (avg. 1,833 per 100 m for ~20 rkm) of any single river section in Montana. On a watershed level, the Big Hole Watershed continues to contain the largest number of streams with WEPE populations (11) and the highest percentage of stable, viable populations in the state (6) (Figure 1, Table 2). Although, the watershed experienced a 15% loss of streams containing WEPE since 2007, and the Big Hole River mainstem contains only widely-scattered, declining populations (Figure 4). Based on the number of tributaries occupied by WEPE in the Big Hole, the mainstem itself likely had thriving populations in not too distant past.

Results by FWP Region

Region 1 continues to support 31 populations of WEPE in six 4th code HUCs across 14 streams; this is a 30% reduction in number of streams occupied (Table 3). But, we verified that the Yaak River contains the largest A-viable population of WEPE in the state with an estimated number of ~1 million individuals. Additionally, East Fisher River and Fivemile Creek are maintaining their A-viable populations (Map 2, Appendix A). This year we also added a B viable population at a previously un-surveyed Pleasant Valley Fisher River site (Map 2, Appendix A).

Region 2 continues to support 54 populations of WEPE in four 4th code HUCs across 22 streams; this is an 8% reduction in number of streams occupied. The Blackfoot River watershed contains the 2nd most streams containing WEPE populations in the state (10), with several A and B viable populations (Clearwater River and Marshall Creek). We verified that Wales Creek contains the 2nd largest A-viable population of WEPE in the state with an estimated number of 50,000 individuals. Other A-viable populations inhabit Upper Willow and West Fork Rock Creeks in the Flint-Rock Watershed (Appendix A).

Table 3. Western Pearlshell occupied streams, populations, viability and trends by 4th code HUC for FWP Regions. *Assumes HUCs not visited in 2014, but evidence supports no WEPE stream loss.

FWP Fisheries	Region 1^		Region 2*		Region 3		Region 4	
	Pre-2010	2014	Pre-2010	2014	Pre-2010	2014	Pre-2010	2014
4th code HUC	6	6	5	4	9	7	2	0
Streams	20	14	24	22	32	23	2	0
Populations	35	31	55	54	64	53	5	0
A-Excellent Pop.	3	5	8	5	2	3	0	0
B-Good Pop.	5	4	14	13	7	5	0	0
C-Fair Pop.	9	10	15	17	25	31	0	0
D-Poor Pop.	13	8	18	9	26	12	5	0
E-Extant Pop.	5	4	0	10	4	2	0	0
X-Extipated Pop.	0	10	0	4	0	18	4	9

^ Assumes 4 CSKT stream WEPE populations experienced no extirpations. Placed in Extant pop.
* Assumes Bitterroot River watershed populations not visited in 2014 had no WEPE stream loss.

Region 3 continues to support 53 populations of WEPE in seven 4th code HUCs across 23 streams (Map 2); this is a 28% reduction in number of streams occupied and 11 fewer populations since 2010 (Table 3). Three of these previously ranked D-populations (42 individuals total) were relocated and grouped into an upper Cherry Creek bed for the glochidia experiment (Stagliano 2014). The Big Hole River watershed contains the most streams with WEPE populations in the state (11), with several A and B viable populations (Clam, Miner and Deep Creeks). The Madison River in the park maintains a B-good population with C populations persisting in MT above Hebgan Reservoir (Appendix A).

Region 4 no longer supports populations of WEPE in the two watersheds that were documented to have D-poor or E-Extant populations prior to 2010. While there was hope that the Smith River population near Fort Logan (~12 individuals) would persist, it appears from our 2014 surveys that they are now extirpated (Figure 2). While there may be WEPE populations persisting in the canyon reach that haven't been documented, I've searched for mussels and shells for the past 10 years of floating that reach with only relic shells as a result. Riparian habitat restoration and maintenance of in-stream flows in the Smith River may allow WEPE reintroductions in the future, since they have inhabited this river recently.

Conclusions

The western pearlshell's current state conservation rank of S2 in Montana is warranted and remains unchanged after running the Nature Serve model with this year's data (Appendix B). Although this study documents several significant population declines (19% loss of populations & 26% stream loss) and even whole watershed extirpations of already declining non-viable populations, an S1 state conservation status is given to a species that is rapidly declining (30-50% loss short-term) and highly vulnerable to extirpation from the state. With 35 viable populations (A and B ranks) spatially distributed across twenty streams in western Montana, the chance of statewide extirpation in the next 30 years is highly unlikely. Additionally, we extended the Yaak River WEPE A-viable population upstream approximately 20 km roughly estimating this population at over a million individuals. But, this fact should not preclude conservation efforts to improve WEPE habitat, distribution, reproduction and recruitment to non-viable populations elsewhere in the state. In the short-term, we may lose many more of these remaining non-viable populations due to random stochastic events or old age senesce, and in the long-term, they are at risk from the lack of reproduction with non-native salmonid host species or climate change (Hastie et al. 2003).

Management Recommendations

- Monitor documented WEPE populations in the regions on a 5-10 year interval.
- Continued observation vigilance by regional fisheries biologists and reporting of shell sightings that may represent new populations (e.g. Brown's Gulch, J. Lindstrom).
- Propose WEPE reintroduction/translocation feasibility studies for suitable habitat streams, and incorporate these into Westslope cutthroat trout conservation action plans (MFWP 2010, Stagliano 2013a, 2013b; French Gulch, J. Olsen).
- Protect stream riparian areas, maintain connectivity and in-stream flows in the documented WEPE streams of your region.
- Support alternative conservation techniques, such as stocking glochidia-infected Westslope cutthroat trout and hatchery propagation efforts for WEPE.

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Appendix A. Mussel survey population data and viability ranks (see Methods) from pre-2010 and 2014.

4th_Code HUC	Stream Name	Latitude	Longitude	Latitude	Longitude	Viability Rank pre-2010	Viability Rank 2014
10020001	Bloody Dick Creek	44.99394	-113.31750	44.99385	-113.31981	B	C
10020001	Bloody Dick Creek	45.00800	-113.37015	45.00800	-113.37015	C	C
10020001	Bloody Dick Creek	45.01658	-113.39276	45.01658	-113.39276	C	C
10020001	Bloody Dick Creek	45.01658	-113.39276	45.01658	-113.39276	C	C
10020001	Bloody Dick Creek	44.99385	-113.31981	44.99297	-113.31872	D	X
10020001	Bloody Dick Creek	45.01411	-113.22919	45.01411	-113.22919	F	
10020001	Bloody Dick Creek	45.07274	-113.42320	45.07274	-113.42320	F	F
10020001	Elk Creek	44.64440	-111.66360	44.64440	-111.66360	F	
10020001	Fish Creek	44.69965	-111.90811	44.69965	-111.90811	F	
10020001	Fish Creek	44.70216	-111.91606	44.70216	-111.91606	F	
10020001	Horse Prairie Creek	45.01320	-113.22821	45.01320	-113.22821	C	C
10020001	Horse Prairie Creek	45.01403	-113.22637	45.01403	-113.22637	C	C
10020001	Horse Prairie Creek	45.01192	-113.22901	45.01192	-113.22901	D	D
10020001	Horse Prairie Creek	44.97514	-112.92111	44.97514	-112.92111	F	
10020001	Horse Prairie Creek	44.97660	-113.25281	44.97527	-113.25295	F	
10020001	Horse Prairie Creek	45.02032	-113.11093	45.02032	-113.11093	F	
10020001	Horse Prairie Creek	45.02526	-113.05644	45.02526	-113.05644	F	
10020001	Little Basin Creek	44.72558	-112.35733	44.72558	-112.35733	D	D
10020001	Medicine Lodge Creek	44.75140	-113.03617	44.75140	-113.03617	F	
10020001	Medicine Lodge Creek	44.87056	-113.00747	44.87056	-113.00747	F	
10020001	Medicine Lodge Creek	44.87139	-113.00724	44.87139	-113.00724	F	
10020001	Medicine Lodge Creek	44.94355	-113.01604	44.94355	-113.01604	F	
10020001	Medicine Lodge Creek	44.98369	-112.98329	44.98369	-112.98329	F	
10020001	Painter Creek	45.06530	-113.21530	45.06530	-113.21530	F	
10020001	Price Creek	44.59392	-112.13058	44.59392	-112.13058	F	
10020001	Red Rock River	44.63854	-112.13790	44.63854	-112.13790	F	
10020001	Red Rock River	44.63948	-112.13846	44.63948	-112.13846	F	
10020001	Red Rock River	44.64219	-111.99532	44.64219	-111.99532	F	
10020001	Red Rock River	44.64280	-112.03622	44.64280	-112.03622	F	
10020001	Red Rock River	44.64738	-112.06622	44.64738	-112.06622	F	
10020001	Red Rock River	44.64738	-112.06622	44.64738	-112.06622	F	
10020001	Red Rock River	44.64753	-112.05749	44.64753	-112.05749	F	
10020001	Red Rock River	44.64759	-112.08113	44.64759	-112.08113	F	
10020001	Red Rock River	44.65519	-111.92918	44.65519	-111.92918	F	
10020001	Red Rock River	44.65547	-112.41129	44.65547	-112.41129	F	
10020001	Red Rock River	44.66404	-112.50269	44.66408	-112.49657	F	
10020001	Red Rock River	44.69343	-112.65373	44.69343	-112.65373	F	

10020001	Red Rock River	44.73240	-112.69187	44.72919	-112.69132	F	
10020001	Red Rock River	44.84600	-112.77220	44.84600	-112.77220	F	
10020001	Red Rock River	44.84640	-112.77290	44.84640	-112.77290	F	
10020001	Red Rock River	44.84700	-112.77450	44.84700	-112.77450	F	
10020001	Red Rock River	44.84770	-112.77780	44.84770	-112.77780	F	
10020001	Red Rock River	44.91555	-112.82485	44.91555	-112.82485	F	
10020001	Sage Creek	44.73456	-112.65339	44.73456	-112.65339	F	
10020001	Selway Creek	45.11289	-113.42200	45.11289	-113.42200	C	C
10020001	Selway Creek	45.10271	-113.41889	45.10271	-113.41889	D	D
10020001	Selway Creek	45.09291	-113.23362	45.09291	-113.23362	F	
10020001	Shineberger Creek	44.54544	-112.42915	44.54544	-112.42915	F	
10020001	Trail Creek	44.98854	113.29896	44.98838	-113.29951	B	C
10020001	Trail Creek	44.97098	-113.31901	44.97098	-113.31901	C	C
10020001	Trail Creek	44.98588	113.30545	44.98544	113.30561	C	C
10020001	Trail Creek	44.98246	-113.30719	44.98246	-113.30719	F	
10020002	Beaverhead River	45.10067	-112.77760	45.10067	-112.77760	D	X
10020002	Beaverhead River	45.13087	-112.73960	45.13087	-112.73960	D	X
10020002	Beaverhead River	45.18338	-112.6262	45.18338	-112.6262	E	X
10020002	Beaverhead River	45.09817	-112.77703	45.09817	-112.77703	F	
10020002	Beaverhead River	45.23484	-112.62620	45.23484	-112.62620	F	
10020002	Beaverhead River trib	45.13092	-112.73552	45.13092	-112.73552	F	
10020002	Blacktail Deer Creek	45.00528	-112.44510	45.00528	-112.44510	F	
10020002	Cottonwood Creek	44.93326	-112.45056	44.93326	-112.45056	F	
10020002	East Creek	45.10213	-113.41494	45.10213	-113.41494	F	
10020002	Grasshopper Creek	45.23135	-113.07997	45.23135	-113.07997	C	C
10020002	Grasshopper Creek	45.28294	-113.11921	45.28294	-113.11921	C	C
10020002	Grasshopper Creek	45.15978	-112.98619	45.15978	-112.98619	D	D
10020002	Grasshopper Creek	45.48107	-113.11014	45.48107	-113.11014	D	C
10020003	Mill Creek	45.45816	-112.28003	45.45816	-112.28003	F	
10020003	North Fork Greenhorn Creek	45.12194	-112.03920	45.12194	-112.03920	F	F
10020003	Ruby River	45.08590	-112.07408	45.08590	-112.07408	H	X
10020003	Ruby River	45.37467	-112.13815	45.37467	-112.13815	F	
10020004	Bear Creek	45.59780	-110.91090	45.59780	-110.91090	F	
10020004	Bear Creek	45.87715	-113.06974	45.87715	-113.06974	F	
10020004	Berry Creek	45.25263	-113.50551	45.25080	-113.50711	F	
10020004	Big Hole River	45.85939	-113.08425	45.85939	-113.08425	D	D
10020004	Big Hole River	45.31248	-113.44893	45.31248	-113.44893	F	
10020004	Big Hole River	45.43611	-113.45875	45.43611	-113.45875	F	
10020004	Big Hole River	45.48913	-112.69311	45.48913	-112.69311	F	
10020004	Big Hole River	45.62239	-112.69037	45.62239	-112.69037	F	
10020004	Big Hole River	45.70119	-112.73618	45.70119	-112.73618	F	
10020004	Big Hole River	45.78636	-112.91513	45.78636	-112.91513	F	
10020004	Big Hole River	45.85972	-113.08361	45.85972	-113.08361	F	

10020004	Big Hole River	45.88315	-113.11738	45.88315	-113.11738	F	
10020004	Big Lake Creek	45.44481	-113.59939	45.44481	-113.59939	F	
10020004	Big Lake Creek	45.56618	-113.49272	45.56618	-113.49272	F	
10020004	Bigfoot Creek	46.10724	-112.13321	46.10724	-112.13321	F	
10020004	Birch Creek	45.38117	-112.76881	45.38117	-112.76881	F	
10020004	Birch Creek	45.38117	-112.76881	45.38117	-112.76881	F	
10020004	California Creek	45.95510	-113.03880	45.95510	-113.03880	D	X
10020004	California Creek	45.97984	-113.02082	45.98033	-113.01653		F
10020004	Camp Creek	45.65638	-112.61443	45.65638	-112.61443	F	
10020004	Canyon Creek	45.62536	-112.93685	45.62472	-112.93887	F	
10020004	Canyon Creek	45.67674	-112.85618	45.67651	-112.85868	F	
10020004	Chief Joseph Trail Creek	45.65869	-113.81157	45.65869	-113.81157	C	C
10020004	Chief Joseph Trail Creek	45.64998	-113.70241	45.64998	-113.70241	F	
10020004	Clam Creek	45.80060	-113.52217	45.80060	-113.52217	A	A
10020004	Clam Creek	45.80162	-113.52870	45.80162	-113.52870	A	A
10020004	Clam Creek	45.79933	-113.51334	45.80084	-113.52260	C	B
10020004	David Creek	45.53364	-113.03275	45.53364	-113.03275	F	
10020004	Deep Creek	45.93790	-113.09577	45.93868	-113.09627		C
10020004	Deep Creek	45.90897	-113.09791	45.90897	-113.09791	B	C
10020004	Deep Creek	45.91183	-113.11316	45.92732	-113.10032	B	B
10020004	Deep Creek	45.88633	-113.11741	45.88633	-113.11741	D	D
10020004	Deep Creek	45.92732	-113.10032	45.92824	-113.10055		A
10020004	Deno Creek	45.74889	-113.03010	45.74889	-113.03010	F	
10020004	Divide Creek	45.75174	-112.74522	45.75174	-112.74522	F	
10020004	Doolittle Creek	45.71283	-113.33858	45.71186	-113.33732	F	
10020004	Doolittle Creek	45.71750	-113.35008	45.71673	-113.34908	F	
10020004	Doolittle Creek	45.71780	-113.34530	45.71780	-113.34530	F	
10020004	Doolittle Creek	45.73778	-113.37944	45.73778	-113.37944	F	
10020004	Fish Creek	45.79925	-112.40001	45.80020	-112.40396	F	
10020004	Fourth of July Creek	45.65883	-113.06054	45.65883	-113.06054	F	
10020004	Fox Creek	45.27194	-112.35861	45.27194	-112.35861	F	
10020004	French Creek	45.91520	-113.10600	45.91520	-113.10600	C	C
10020004	French Creek	45.94090	-113.07420	45.94090	-113.07420	C	X
10020004	Gold Creek	45.61560	-113.08420	45.61560	-113.08420	F	
10020004	Govenour Creek	45.35115	-113.40926	45.35073	-113.40827	D	D
10020004	Grouse Creek	45.68259	-113.07309	45.68259	-113.07309	F	
10020004	Grouse Creek	45.68687	-113.08568	45.68687	-113.08568	F	
10020004	Happy Creek	45.53477	-113.07682	45.53477	-113.07682	F	
10020004	Jacobsen Creek	45.52754	-113.07172	45.52601	-113.07055	F	
10020004	Jacobsen Creek	45.53000	-113.05441	45.53000	-113.05441	F	
10020004	Jacobsen Creek	45.53416	-113.03519	45.53416	-113.03519	F	
10020004	Jacobsen Creek trib#2	45.53110	-113.06364	45.53110	-113.06364	F	
10020004	Jacobsen Creek trib#2	45.53110	-113.06364	45.53110	-113.06364	F	

10020004	Jerry Creek	45.79556	-112.90165	45.79556	-112.90165	F	
10020004	Jerry Creek	45.82857	-112.87694	45.83082	-112.87561	F	
10020004	LaMarche Creek	45.87830	-113.19860	45.87830	-113.19860	F	
10020004	LaMarche Creek	45.91080	-113.21720	45.91080	-113.21720	F	
10020004	Miner Creek	45.33905	-113.54669	45.33905	-113.54669	B	B
10020004	Miner Creek	45.33729	-113.54459	45.33714	-113.54530	C	C
10020004	Moose Creek	45.70042	-112.73557	45.70042	-112.73557	D	X
10020004	Moose Creek	45.71377	-112.70505	45.71377	-112.70505	F	
10020004	Moose Creek	45.74195	-112.67339	45.74195	-112.67339	F	
10020004	Moose Creek	45.74373	-112.67081	45.74373	-112.67081	F	
10020004	Moose Creek	45.76720	-112.56764	45.77242	-112.56428	F	
10020004	Moose Creek Spring	45.63366	-113.07452	45.63366	-113.07452	F	
10020004	Mussingbrod Creek	45.77211	-113.58776	45.77211	-113.58776	D	D
10020004	Mussingbrod Creek	45.73220	-113.57080	45.73220	-113.57080	F	
10020004	North Fork Big Hole River	45.64353	-113.65279	45.64353	-113.65279	C	C
10020004	North Fork Big Hole River	45.64417	-113.65194	45.64417	-113.65194	C	C
10020004	North Fork Big Hole River	45.64446	-113.65011	45.64446	-113.65011	C	C
10020004	North Fork Big Hole River	45.70528	-113.45944	45.70528	-113.45944	F	F
10020004	Odell Creek	45.55906	-113.20129	45.56160	-113.20099	F	
10020004	Pettengill Creek	45.68218	-113.06323	45.68218	-113.06323	F	D
10020004	Pintlar Creek	45.90720	-113.48110	45.90720	-113.48110	F	
10020004	Pintlar Creek	45.90731	-113.48004	45.90731	-113.48004	F	
10020004	Prairie Creek	45.73958	-113.87300	45.73958	-113.87300	F	
10020004	Ruby Creek	45.54358	-113.75841	45.54358	-113.75841	F	
10020004	Spring Gulch	45.83646	-112.91764	45.83646	-112.91764	F	
10020004	Spring Seep nr Fourth of July Creek	45.65830	-113.06203	45.65830	-113.06203	F	
10020004	Steel Creek	45.59906	-113.34986	45.59898	-113.34672	F	
10020004	Stine Creek	45.71932	-113.02850	45.71932	-113.02850	F	
10020004	Swamp Creek	45.65889	-113.46972	45.65889	-113.46972	F	
10020004	Thompson Creek	45.79962	-113.51193	45.79962	-113.51193	C	C
10020004	Trail Creek	45.65670	-113.80940	45.65670	-113.80940	C	C
10020004	Trail Creek	45.70425	-113.86631	45.70425	-113.86631	C	C
10020004	Trail Creek	45.67055	-113.82670	45.67055	-113.82670	F	
10020004	Trapper Creek	45.63345	-112.87835	45.63133	-112.88010	F	
10020004	Twelvemile Creek	45.97458	-113.09907	45.98124	-113.10362	F	
10020004	West Fork Jimmie New Creek	45.83977	-112.95124	45.83977	-112.95124	F	
10020004	West Fork Jimmie New Creek	45.83977	-112.95124	45.83977	-112.95124	F	
10020004	Willow Creek	45.44806	-112.82777	45.44806	-112.82777	F	
10020004	Willow Creek	45.44810	-112.82785	45.44810	-112.82785	F	

10020004	Wisconsin Creek	45.59667	-113.34027	45.59667	-113.34027	F	
10020004	Wise River	45.54311	-113.08388	45.54319	-113.08545	F	
10020004	Wise River	45.61068	-113.09101	45.61068	-113.09101	F	
10020004	Wise River	45.61450	-113.08940	45.61450	-113.08940	F	
10020004	Wise River	45.66396	-113.06375	45.66396	-113.06375	F	
10020004	Wise River	45.73461	-113.01626	45.73461	-113.01626	F	
10020004	Wise River	45.79206	-112.95128	45.79206	-112.95128	F	
10020004	Wise River	45.79310	-112.95030	45.79310	-112.95030	F	
10020004	Wyman Creek	45.54908	-113.14712	45.54516	-113.14752	F	
10020005	Baggs Creek	46.39124	-112.59520	46.39276	-112.59194	F	
10020005	Beefstraight Creek	45.98114	-112.83307	45.98044	-112.83526	F	
10020005	Beefstraight Creek	45.98341	-112.82820	45.98087	-112.81643	F	
10020005	Big Pipestone Creek	45.87582	-112.17989	45.87582	-112.17989	F	
10020005	Bison Creek	46.25268	-112.34045	46.25098	-112.33974	F	
10020005	Fish Creek	45.80618	-112.37225	45.80618	-112.37225	F	
10020005	Halfway Creek	45.95483	-112.29862	45.95677	-112.30021	F	
10020005	Halfway Creek	45.95605	-112.29846	45.95605	-112.29846	D	D
10020005	Hells Canyon Creek	45.65807	-112.38778	45.65863	-112.38999	F	
10020005	South Boulder River	45.75975	-111.95928	45.75975	-111.95928	F	
10020005	State Creek	46.10048	-112.14178	46.10048	-112.14178	F	
10020005	Whitetail Creek	45.96225	-112.16094	45.96225	-112.16094	F	
10020006	Basin Creek	46.27460	-112.26588	46.27460	-112.26588	F	
10020006	Bison Creek	46.25498	-112.34190	46.25137	-112.34125	F	
10020006	Bison Creek	46.25498	-112.34190	46.25498	-112.34190	F	
10020006	Boulder River	45.87071	-111.94280	45.87299	-111.93995	D	C
10020006	Boulder River	45.96992	-111.88973	45.97565	-111.88903	F	
10020006	Boulder River	46.11356	-111.91931	46.11356	-111.91931	F	
10020006	Boulder River	46.17734	-112.03230	46.17734	-112.03230	F	
10020006	Boulder River	46.25427	-112.47239	46.25441	-112.47409	F	
10020006	Boulder River	46.26232	-112.34271	46.26232	-112.34271	F	
10020006	Boulder River	46.25568	-112.40315	46.25391	-112.40576		F
10020006	Elkhorn Creek	46.25127	-111.96381	46.25127	-111.96381	F	
10020006	High Ore Creek	46.28066	-112.20274	46.28066	-112.20274	F	
10020006	Little Boulder Creek	46.20042	-112.09353	46.20042	-112.09353	F	
10020006	Little Boulder River	46.17040	-112.20250	46.17040	-112.20250	F	
10020006	Muskrat Creek	46.22863	-112.09053	46.22863	-112.09053	F	
10020006	Muskrat Creek	46.26495	-112.08293	46.26495	-112.08293	F	
10020006	Muskrat Creek	46.28189	-112.07314	46.28189	-112.07314	F	
10020006	Muskrat Creek	46.30613	-112.02909	46.30613	-112.02909	F	
10020006	Red Rock Creek	46.27610	-112.33050	46.27610	-112.33050	F	
10020006	Rock Creek	46.25775	-112.50317	46.25775	-112.50317	F	
10020006	Rock Creek	46.26149	-112.51865	46.26149	-112.51865	F	
10020006	Swamp Creek	45.60209	-113.55934	45.60209	-113.55934	F	
10020007	Cabin Creek	44.87640	-111.34560	44.87640	-111.34560	F	

10020007	Cherry Creek TEI property	45.59469	-111.49068	45.59469	-111.49068	F	C
10020007	Cherry Creek TEI property	45.61148	-111.51493	45.61148	-111.51493	D	D
10020007	Cherry Creek TEI property	45.61724	-111.54319	45.61626	-111.54155	D	X
10020007	Cherry Creek TEI property	45.61977	-111.54643	45.61977	-111.54643	F	
10020007	Cherry Creek @ RT84 bridge	45.62191	-111.54842	45.62191	-111.54842	D	X
10020007	Cherry Creek @ Madison Con	45.62285	-111.54975	45.62285	-111.54975	D	X
10020007	Cougar Creek	44.71508	-111.11069	44.76984	-111.11200	F	F
10020007	Duck Creek	44.77349	-111.13171	44.77349	-111.13171		C
10020007	Duck Creek	44.77366	-111.12922	44.77366	-111.12922		C
10020007	Duck Creek	44.77956	-111.11249	44.77956	-111.11249	C	D
10020007	Duck Creek	44.77958	-111.11499	44.77958	-111.11499	F	
10020007	Duck Creek	44.77998	-111.11357	44.77998	-111.11357	F	
10020007	Elk Creek	45.62670	-111.41430	45.62670	-111.41430	F	
10020007	Fourmile Creek	45.34124	-110.23215	45.34124	-110.23215	F	
10020007	Hot Springs Creek	45.58564	-111.59409	45.58564	-111.59409	F	
10020007	Jack Creek	45.35338	-111.54909	45.35338	-111.54909	F	
10020007	Madison River	44.66194	-110.99187	44.66294	-110.99197	B	B
10020007	Madison River	44.70484	-111.09695	44.70501	-111.09818	B	B
10020007	Madison River	44.65740	-111.06970	44.65740	-111.06970	C	C
10020007	Madison River	44.70339	-111.09805	44.70361	-111.09526	C	C
10020007	Madison River	44.64702	-110.93216	44.64702	-110.93216	F	
10020007	Madison River	45.57462	-111.59357	45.57462	-111.59357	F	
10020007	Madison River	45.58510	-111.57629	45.58510	-111.57629	F	
10020007	Madison River @Bakers Hole	44.77988	-111.11298	44.77988	-111.11298	C	C
10020007	Madison River side channel	45.59978	-111.57332	45.59978	-111.57332	F	F
10020007	Meadow Creek	45.44380	-111.71891	45.44427	-111.71975	F	
10020007	Meadow Creek @ Ennis Lake	45.44259	-111.71032	45.44291	-111.71187	F	
10020007	Middle Fork of West Fork	45.29219	-111.38807	45.29219	-111.38807	F	
10020007	No Man Creek	45.11550	-111.49810	45.11550	-111.49810	F	
10020007	North Fork Meadow Creek	45.65757	-111.89389	45.65757	-111.89389	F	F
10020007	O'dell Creek	45.33113	-111.72831	45.33113	-111.72831	E	X
10020007	O'dell Spring Creek	45.30711	-111.73920	45.30711	-111.73920	F	
10020007	O'dell Spring Creek	45.34225	-111.71534	45.33686	-111.72204	E	X
10020007	South Fork Madison River	44.65752	-111.15063	44.65605	-111.15097	F	
10020007	South Fork Madison	44.67870	-111.19432	44.67870	-111.19432	F	

	River						
10020007	West Fork Beaver Creek	44.90506	-111.36955	44.90506	-111.36955	F	
10020007	West Fork Beaver Creek trib	44.90346	-111.39455	44.90346	-111.39455	F	
10020008	Beehive Basin	45.28692	-111.38665	45.28692	-111.38665	F	
10020008	Bozeman Creek	45.69977	-111.02751	45.69977	-111.02751	F	
10020008	East Gallatin River	45.72568	-111.06629	45.72360	-111.06203	D	E
10020008	East Gallatin River	45.83886	-111.16070	45.83886	-111.16070	D	E
10020008	East Gallatin River	45.86278	-111.20226	45.86278	-111.20226	E	X
10020008	East Gallatin River	45.87345	-111.23249	45.87160	-111.23218	D	X
10020008	East Gallatin River	45.88219	-111.24772	45.88276	-111.24763	D	X
10020008	East Gallatin River	45.69916	-111.02348	45.69916	-111.02348	F	
10020008	East Gallatin River	45.82659	-111.14189	45.82421	-111.14200	F	
10020008	Elkhorn Creek	45.14547	-111.21210	45.14547	-111.21210	F	
10020008	Elkhorn Creek	45.14939	-111.21942	45.14939	-111.21942	F	
10020008	Gallatin River	45.05445	-111.15644	45.05445	-111.15644	F	
10020008	Gallatin River	45.07036	-111.19460	45.07036	-111.19460	F	
10020008	Gallatin River	45.28158	-111.22520	45.28158	-111.22520	F	
10020008	Gallatin River	45.28158	-111.22520	45.28158	-111.22520	F	
10020008	Gallatin River	45.29858	-111.20384	45.29858	-111.20384	F	
10020008	Gallatin River	45.42645	-111.23251	45.42645	-111.23251	F	
10020008	Gallatin River	45.48485	-111.27023	45.48485	-111.27023	F	
10020008	Gallatin River	45.67107	-111.20828	45.67107	-111.20828	F	
10020008	Gallatin River	45.73680	-111.21862	45.73680	-111.21862	F	
10020008	Gallatin River	45.73944	-111.21866	45.73944	-111.21866	F	
10020008	Grayling Creek	44.80197	-111.10935	44.80197	-111.10935	F	
10020008	Grayling Creek	44.85284	-111.06271	44.85284	-111.06271	F	
10020008	Middle Fork of West Fork	45.29389	-111.41312	45.29389	-111.41312	F	
10020008	South Fork of West Fork Gallatin River	45.26713	-111.27164	45.26713	-111.27164	F	
10020008	Storm Castle Creek	45.43920	-111.19838	45.43920	-111.19838	F	
10020008	Storymill Creek	45.69740	-111.02109	45.69740	-111.02109	D	X
10020008	Storymill Creek	45.69861	-111.02246	45.69861	-111.02246	D	X
10030101	Canyon Creek trib	46.80616	-112.24816	46.80616	-112.24816	F	
10030101	Confederate Creek	46.57600	-111.45300	46.57600	-111.45300	F	
10030101	Crow Creek	46.25517	-111.67165	46.25517	-111.67165	F	
10030101	Deep Creek	46.33030	-111.27400	46.33030	-111.27400	D	X
10030101	Deep Creek	46.32671	-111.36875	46.32680	-111.36405	D	X
10030101	Deep Creek	46.32449	-111.29467	46.32407	-111.29539	F	
10030101	Deep Creek	46.32755	-111.27741	46.32755	-111.27741	F	
10030101	Deep Creek	46.33202	-111.26528	46.33202	-111.26528	F	
10030101	Deep Creek	47.10639	-111.27396	47.10639	-111.27396	F	
10030101	Dry Creek	46.25012	-111.39715	46.25005	-111.39432	D	X

10030101	Dry Creek	46.26099	-111.34025	46.26099	-111.34025	F	
10030101	Duck Creek	46.48350	-111.35750	46.48350	-111.35750	F	
10030101	Duck Creek	46.48680	-111.38650	46.48680	-111.38650	F	
10030101	Hargrove Creek	47.20906	-112.27739	47.20763	-112.27971	F	
10030101	Indian Creek	46.31149	-111.66750	46.31149	-111.66750	F	
10030101	Indian Creek	46.31680	-111.63182	46.31680	-111.63182	F	
10030101	Indian Creek	46.32790	-111.61259	46.31149	-111.66750	F	
10030101	LaMarche Creek	45.87659	-113.19838	45.87659	-113.19838	F	
10030101	Little Prickly Pear Creek	46.78749	-112.40737	46.78596	-112.40815	F	
10030101	Little Prickly Pear Creek	46.79768	-112.36914	46.79768	-112.36914	F	
10030101	Little Prickly Pear Creek	46.85569	-112.17499	46.85275	-112.17660	F	
10030101	Little Prickly Pear Creek	46.90260	-112.12404	46.90260	-112.12404	F	
10030101	Little Prickly Pear Creek	47.00544	-112.07147	47.00544	-112.07147	F	
10030101	Lump Gulch	46.47729	-112.07694	46.47729	-112.07694	F	
10030101	Medicine Rock Creek	46.92880	-112.15036	46.92880	-112.15036	F	
10030101	Prickly Pear Creek	46.59219	-111.92126	46.59219	-111.92126	D	X
10030101	Prickly Pear Creek	46.37769	-112.03094	46.37769	-112.03094	F	
10030101	Prickly Pear Creek	46.46870	-111.98316	46.46870	-111.98316	F	
10030101	Prickly Pear Creek	46.54062	-111.92699	46.54062	-111.92699	F	
10030102	Dearborn River	47.19912	-112.09674	47.19912	-112.09674	F	
10030102	Dearborn River	47.21904	-112.24185	47.21904	-112.24185	F	
10030102	Flat Creek	47.25204	-112.06489	47.25204	-112.06489	F	
10030103	Beaver Creek	46.74395	-111.40850	46.74395	-111.40850	F	
10030103	Beaver Creek	46.75185	-111.19135	46.75185	-111.19135	F	
10030103	Calf Creek	46.84788	-110.95653	46.84788	-110.95653	F	
10030103	Camas Creek	46.67809	-111.19502	46.67809	-111.19502	F	
10030103	Eagle Creek	46.82843	-111.16463	46.82843	-111.16463	F	
10030103	East Fork Grasshopper Creek	46.54322	-110.74831	46.54322	-110.74831	F	
10030103	Four Mile Creek	46.55023	-110.74573	46.55023	-110.74573	F	
10030103	Four Mile Creek	46.58714	-110.79192	46.58714	-110.79192	F	
10030103	Hound Creek	47.21526	-111.39342	47.21526	-111.39342	F	
10030103	Moose Creek	46.85117	-110.86066	46.85117	-110.86066	F	
10030103	Moose Creek	46.85117	-110.86066	46.85117	-110.86066	F	
10030103	Newlan Creek	46.59156	-111.04922	46.59156	-111.04922	F	
10030103	North Fork Smith River	46.57097	-110.85298	46.57104	-110.85127	F	F
10030103	North Fork Smith River	46.57704	-110.84342	46.57704	-110.84342	F	F
10030103	North Fork Smith River	46.64061	-110.73511	46.63595	-110.73661	F	F

10030103	North Fork Smith River	46.68023	-110.71337	46.68023	-110.71337	F	F
10030103	Sheep Creek	46.77212	-110.85566	46.77214	-110.85268	F	F
10030103	Sheep Creek	46.76668	-110.79797	46.80755	-111.15774	F	F
10030103	Sheep Creek	46.79489	-110.91058	46.79336	-110.91094	F	F
10030103	Sheep Creek	46.80755	-111.15774	46.80755	-111.15774	F	F
10030103	Sheep Creek	46.79512	-110.91037	46.79336	-110.91094		F
10030103	Sheep Creek	46.77212	-110.85566	46.77197	-110.85345		F
10030103	Sheep Creek	46.77725	-110.89882	46.77767	-110.89800		F
10030103	Sheep Creek	46.78512	-110.90883	46.78447	-110.90650		F
10030103	Smith River	46.54840	-111.00908	46.54516	-111.00936	X	X
10030103	Smith River	46.58843	-111.05229	46.58843	-111.05229	F	
10030103	Smith River	46.58994	-111.05261	46.58994	-111.05261	F	
10030103	Smith River	46.67544	-111.14280	46.67139	-111.13991	D	X
10030103	Smith River	46.67544	-111.14286	46.67544	-111.14286	X	F
10030103	Smith River	46.72399	-111.18249	46.72399	-111.18249	X	F
10030103	Smith River	46.75321	-111.16840	46.75321	-111.16840	D	X
10030103	Smith River	46.75526	-111.17185	46.75411	-111.17309	X	F
10030103	Smith River	46.75528	-111.17185	46.75528	-111.17185	X	F
10030103	Smith River	46.79585	-111.17866	46.79585	-111.17866	F	F
10030103	Smith River	46.80385	-111.18310	46.80385	-111.18310	D	X
10030103	Smith River	46.80405	-111.18423	46.80319	-111.18070	F	
10030103	Smith River	46.80435	-111.18284	46.80435	-111.18284	F	
10030103	Smith River	46.80629	-111.18471	46.80405	-111.18423	F	
10030103	Smith River	46.84688	-111.20995	46.84688	-111.20995	F	
10030103	Smith River	46.85511	-111.24734	46.85511	-111.24734	F	
10030103	Smith River	46.86925	-111.27231	46.86925	-111.27231	F	
10030103	Smith River	46.87099	-111.27081	46.87099	-111.27081	D	X
10030103	Smith River	46.95896	-111.29864	46.95896	-111.29864	D	X
10030103	Smith River	47.09837	-111.28163	47.09837	-111.28163	F	
10030103	Smith River	47.17446	-111.33173	47.17446	-111.33173	F	
10030103	Smith River	47.18183	-111.33971	47.18183	-111.33971	F	
10030103	Smith River	47.26159	-111.42065	47.26159	-111.42065	F	
10030103	Smith River	47.38973	-111.44749	47.38973	-111.44749	F	
10030103	Smith River	47.39335	-111.44975	47.39335	-111.44975	F	
10030103	Smith River	47.39366	111.44955	47.39366	-111.44955	F	
10030103	Smith River tributary	46.58898	-111.05308	46.58898	-111.05308	F	
10030103	South Fork Smith River	46.40943	-110.89134	46.40943	-110.89134	F	
10030103	South Fork Smith River	46.44657	-110.93047	46.44657	-110.93047	F	
10030103	Spring Park Creek	45.47636	-112.13833	45.47636	-112.13833	F	
10030103	Tenderfoot Creek	46.91987	-110.86907	46.91987	-110.86907	F	
10030103	Tenderfoot Creek	46.95019	-111.14362	46.95033	-111.14365	F	
10030103	Tenderfoot Creek	46.95049	-111.14740	46.95077	-111.14448	F	

10030103	Thompson Gulch	46.51630	-111.21327	46.51630	-111.21327	F	
10030103	Thompson Gulch	46.60957	-111.09198	46.60957	-111.09198	F	
10030103	Trout Creek	47.02774	-111.29121	47.02774	-111.29121	F	
10030103	Trout Creek	47.05357	-111.27677	47.05357	-111.27677	F	
10030103	Willow Creek trib to NF Smith River	46.56711	-110.85694	46.56711	-110.85694	F	
10030104	Beaver Creek	47.55574	-112.74722	47.55574	-112.74722	F	
10030104	Beaver Creek	47.55574	-112.74722	47.55574	-112.74722	F	
10030104	Beaver Creek	47.59559	-112.75332	47.59559	-112.75332	F	
10030104	Elk Creek	47.48527	-112.38748	47.48527	-112.38748	F	
10030104	Elk Creek	47.50237	-112.36515	47.50237	-112.36515	F	
10030104	Elk Creek	47.51894	-112.30468	47.51894	-112.30468	F	
10030104	Ford Creek	47.44166	-112.66714	47.44166	-112.66714	F	
10030104	South Fork Sun River	47.48698	-112.91821	47.48698	-112.91821	F	
10030104	South Fork Sun River	47.49160	-112.90900	47.49160	-112.90900	F	
10030104	South Fork Sun River	47.49160	-112.90900	47.49160	-112.90900	F	
10030201	South Fork Two Medicine Creek	48.36150	-113.24960	48.36150	-113.24960	F	
10040201	Musselshell River	46.30876	-109.19017	46.30876	-109.19017	F	
10040201	Musselshell River	46.31519	-109.18520	46.31519	-109.18520	F	
10040201	Musselshell River	46.39018	-109.65420	46.39018	-109.65420	F	
10040201	Musselshell River	46.42907	-109.84167	46.42907	-109.84167	F	
10040201	Musselshell River	46.44779	-110.17830	46.44779	-110.17830	F	
10040201	Musselshell River @ state section	46.31654	-109.41853	46.31654	-109.41853	F	
10040201	Musselshell River @ state section	46.31799	-109.42023	46.31799	-109.42023	F	
10040201	North Fork Musselshell River	46.49318	-110.31645	46.49318	-110.31645	F	F
17010101	Dry Creek	48.29565	-115.84173	48.29565	-115.84173	F	
17010101	Fisher River	48.24472	-115.29077	48.24472	-115.29077	F	
17010101	Fisher River	48.36292	-115.32267	48.36292	-115.32267	F	
17010101	Fivemile Creek	48.53498	-115.20319	48.53498	-115.20319	A	A
17010101	Fivemile Creek	48.53658	-115.19758	48.53658	-115.19758	B	B
17010101	Fortine Creek	48.52472	-114.95300	48.52472	-114.95300		F
17010101	Fortine Creek	48.65951	-114.89836	48.65951	-114.89836		F
17010101	Fortine Creek	48.65951	-114.89836	48.65951	-114.89836		F
17010101	Fortine Creek	48.79834	-114.95311	48.79834	-114.95311		F
17010101	Fortine Creek	48.60467	-114.95766	48.60467	-114.95766	C	X
17010101	Keeler Creek	48.33416	-115.93868	48.33416	-115.93868	F	
17010101	Keeler Creek	48.35716	-115.85899	48.35716	-115.85899	F	
17010101	Lake Creek	48.42091	-115.86332	48.42091	-115.86332	F	
17010101	Meadow Creek	48.42091	-115.86332	48.78364	-115.92332	F	
17010101	Pipe Creek	48.42730	-115.59665	48.42730	-115.59665	F	
17010101	Pipe Creek	48.52237	-115.52825	48.52237	-115.52825	F	

17010101	Pipe Creek	48.57809	-115.59150	48.57809	-115.59150	F	
17010101	Snowshoe Creek	48.20493	-115.64683	48.20493	-115.64683	F	
17010101	Snowshoe Creek	48.20721	-115.64200	48.20721	-115.64200	F	
17010101	Swamp Creek	48.21829	-115.46811	48.21829	-115.46811	F	
17010101	Thompson River	47.71273	-115.05859	47.71273	-115.05859	F	F
17010101	Tobacco River	48.87352	-115.04648	48.87352	-115.04648		F
17010101	Tobacco River	48.87707	-115.05345	48.87707	-115.05345		F
17010101	Tobacco River	48.89850	-115.12310	48.89850	-115.12310	D	X
17010102	East Fisher River	47.93005	-115.28469	47.93005	-115.28469	**B**	B
17010102	East Fisher River	47.95641	-115.32267	47.95641	-115.32267	A	A
17010102	East Fisher River	47.95754	-115.33348	47.95754	-115.33348	A	A
17010102	Little Wolf Creek	48.30487	-115.03484	48.30487	-115.03484		F
17010102	Little Wolf Creek	48.30518	-115.03511	48.30518	-115.03511	F	F
17010102	Pleasant Valley Fisher River	48.04413	-115.28385	48.04413	-115.28385	C	D
17010102	Pleasant Valley Fisher River	48.02584	-115.33896	48.02462	-115.34073	F	F
17010102	Pleasant Valley Fisher River	48.04445	-115.28459	48.04445	-115.28459	F	D
17010102	Pleasant Valley Fisher River	48.05443	-115.27847	48.05443	-115.27847	F	F
17010102	Pleasant Valley Fisher River	48.08737	-115.16377	48.08737	-115.16377	NA	B
17010102	Pleasant Valley Fisher River	48.12187	-115.13192	48.12187	-115.13192	NA	F
17010102	Silver Butte Fisher Creek	47.97334	-115.42979	47.97334	-115.42979		F
17010102	Silver Butte Fisher Creek	48.00738	-115.36793	48.00738	-115.36793		F
17010102	Slimmer Creek	48.03182	-115.06092	48.03182	-115.06092	D	D
17010102	Wolf Creek	48.23590	-115.26600	48.23590	-115.26600	B	B
17010102	Wolf Creek	48.26410	-115.15415	48.26410	-115.15415	C	C
17010102	Wolf Creek	48.29862	-115.04420	48.29862	-115.04420	C	C
17010102	Wolf Creek	48.30174	-115.03806	48.30174	-115.03806	C	C
17010102	Wolf Creek	48.30627	-115.03677	48.30627	-115.03677	F	
17010103	Basin Creek	48.91220	-115.47480	48.91220	-115.47480	F	
17010103	Beaver Creek	48.81921	-115.68125	48.81921	-115.68125	F	
17010103	Beaver Creek	48.82000	-115.68000	48.82000	-115.68000	F	
17010103	Clay Creek	48.76500	-115.66830	48.76500	-115.66830	F	
17010103	East Fork Yaak River	48.93390	-115.45340	48.93390	-115.45340	F	
17010103	Green Creek	48.87000	-115.95000	48.87000	-115.95000	F	
17010103	Hubbard Creek	48.94300	-115.48000	48.94300	-115.48000	F	
17010103	Lap Creek	48.88288	-115.66396	48.88288	-115.66396	F	
17010103	Pete Creek	48.90000	-115.81000	48.90000	-115.81000	D	X
17010103	Pete Creek	48.85000	-115.77000	48.85000	-115.77000	F	F
17010103	Seventeenmile Creek	48.63000	-115.72000	48.63000	-115.72000	F	

17010103	Seventeenmile Creek	48.63730	-115.72032	48.63730	-115.72032	F	
17010103	Seventeenmile Creek	48.67678	-115.81902	48.67678	-115.81902	F	
17010103	Seventeenmile North Fork	48.66000	-115.76000	48.66000	-115.76000	F	
17010103	Smoot Creek	48.72000	-115.64000	48.72000	-115.64000	F	
17010103	Spread Creek	48.91000	-115.99000	48.91000	-115.99000	F	
17010103	Turner Creek	48.86452	-115.58420	48.86452	-115.58420	F	
17010103	Vinal Creek	48.86056	-115.64426	48.86056	-115.64426		F
17010103	Vinal Creek	48.86426	-115.58639	48.86426	-115.58639	D	C
17010103	West Fork Yaak River	48.95255	-115.61042	48.95255	-115.61042	D	X
17010103	Yaak River	48.95806	-115.61129	48.95806	-115.61129		C
17010103	Yaak River	48.68505	-115.85803	48.68505	-115.85803		A
17010103	Yaak River	48.69447	-115.86456	48.69447	-115.86456		A
17010103	Yaak River	48.80210	-115.90747	48.80210	-115.90747		C
17010103	Yaak River	48.56106	-115.97762	48.56106	-115.97762	D	X
17010103	Yaak River	48.64450	-115.88620	48.64450	-115.88620	D	X
17010103	Yaak River	48.82761	-115.81282	48.82761	-115.81282	F	F
17010103	Yaak River East Fork	48.93282	-115.45085	48.93282	-115.45085	F	F
17010103	Yaak River East Fork	48.94000	-115.54000	48.94000	-115.54000	F	F
17010103	Yaak River East Fork	48.95106	-115.61404	48.95106	-115.61404	F	F
17010103	Yaak River South Fork	48.78866	-115.66629	48.78866	-115.66629	F	F
17010103	Yaak River South Fork	48.79000	-115.66000	48.79000	-115.66000	F	
17010201	Browns Gulch Creek	46.06047	-112.61490	46.06091	-112.61447	A	A
17010201	Browns Gulch Creek	46.12165	-112.62153	46.12165	-112.62153	B	B
17010201	Browns Gulch Creek	46.01361	-112.68658	46.01361	-112.68658	F	
17010201	Browns Gulch Creek	46.12998	-112.60614	46.12998	-112.60614	F	
17010201	Browns Gulch Creek	46.13365	-112.58031	46.13365	-112.58031	F	
17010201	Browns Gulch Creek	46.13467	-112.57754	46.13467	-112.57754	F	
17010201	Browns Gulch Creek	46.13519	-112.57650	46.13519	-112.57650	F	
17010201	Elliston Creek	46.55600	-112.43120	46.55600	-112.43120	C	C
17010201	Dog Creek	46.64205	-112.37243	46.64205	-112.37243	F	
17010201	Little Blackfoot River	46.42200	-112.48700	46.42200	-112.48700	F	
17010201	Little Blackfoot River	46.51953	-112.79340	46.51953	-112.79340	F	
17010201	Little Blackfoot River	46.56287	-112.42737	46.56287	-112.42737	F	
17010201	Little Blackfoot River	46.56671	-112.67125	46.56671	-112.67125	F	
17010201	Little Blackfoot River	46.57863	-112.52690	46.57863	-112.52690	F	
17010201	Little Blackfoot River	46.59514	-112.59203	46.59514	-112.59203	F	
17010201	Little Blackfoot River	46.59524	-112.59172	46.59512	-112.59219	F	
17010201	Little Blackfoot River	46.59653	-112.58721	46.59653	-112.58721	F	
17010201	Little Blackfoot Spring Creek	46.60795	-112.55464	46.60795	-112.55464	F	
17010201	Spotted Dog Creek	46.50862	-112.56565	46.50862	-112.56565	F	
17010201	Warm Springs Creek	45.45440	-113.29940	45.45440	-113.29940	F	
17010201	Warm Springs Creek	46.13400	-112.95321	46.13439	-112.95509	F	
17010201	Warm Springs Creek	46.13570	-112.96898	46.13570	-112.96898	F	

17010201	Warm Springs Creek	46.13648	-112.89615	46.13648	-112.89615	F	
17010201	Warm Springs Creek	46.13759	-112.89201	46.13645	-112.89617	F	
17010201	Warm Springs Creek	46.14228	-112.99227	46.14228	-112.99227	F	
17010201	Warm Springs Creek	46.17470	-113.15617	46.17470	-113.15617	F	
17010202	Barnes Creek	46.61089	-113.16017	46.61089	-113.16017	F	
17010202	Bowles Creek	46.19289	-113.75200	46.19289	-113.75200	F	
17010202	Copper Creek	46.04586	-113.58806	46.04586	-113.58806	F	
17010202	Copper Creek	46.05487	-113.56688	46.05487	-113.56688	F	
17010202	Dempsy Creek	46.31002	-112.93904	46.31002	-112.93904	F	
17010202	East Fork Rock Creek	46.19326	-113.48547	46.19326	-113.48547	F	
17010202	Flint Creek	46.33779	-113.32078	46.33779	-113.32078	F	
17010202	Flint Creek	46.36802	-113.31720	46.36802	-113.31720	F	
17010202	Fred Burr Creek	46.29542	-113.31710	46.29542	-113.31710	F	
17010202	Grizzly Creek	46.57458	-113.65663	46.57458	-113.65663	F	
17010202	Lost Creek	46.16215	-112.89142	46.16215	-112.89142	F	
17010202	Lost Creek	46.19413	-112.82108	46.16215	-112.89142	F	
17010202	Lost Creek	46.19652	-112.98052	46.19635	-112.97858	F	
17010202	Lost Creek	46.19981	-112.98721	46.20062	-112.98945	F	
17010202	Lost Creek	46.22097	-113.02952	46.22097	-113.02952	F	
17010202	Marshall Creek	46.36743	-113.33273	46.36743	-113.33273	F	
17010202	Modesty Creek	46.23426	-112.80697	46.23426	-112.80697	F	
17010202	Moose Meadows Creek	46.13685	-113.58987	46.13685	-113.58987	C	D
17010202	Moose Meadows Creek	46.14477	-113.58796	46.14477	-113.58796		F
17010202	North Fork Willow Creek	46.56843	-113.35969	46.56843	-113.35969	B	C
17010202	North Fork Willow Creek	46.58419	-113.41453	46.58419	-113.41453	F	
17010202	North Fork Willow Creek	46.56832	-113.36020	46.56832	-113.36020		C
17010202	Racetrack Creek	46.27618	-112.91261	46.27618	-112.91261	F	
17010202	Racetrack Creek	46.27649	-112.91758	46.27755	-112.91886	F	
17010202	Ranch Creek	46.52565	-113.62341	46.52565	-113.62341	F	
17010202	Rock Creek	46.39796	-113.68957	46.39796	-113.68957	F	
17010202	Rock Creek	46.40818	-112.96772	46.40818	-112.96772	F	
17010202	Rock Creek	46.70390	-113.67357	46.70390	-113.67357	F	
17010202	Rock Creek	46.70719	-113.67246	46.70719	-113.67246	F	
17010202	Rock Creek	47.03611	-112.92361	47.03611	-112.92361	F	
17010202	Sand Basin Creek	46.19628	-113.69806	46.19628	-113.69806	C	C
17010202	Sand Basin Creek	46.19362	-113.69407	46.19362	-113.69407	D	C
17010202	Sand Basin Creek	46.20027	-113.70367	46.20071	-113.70286		C
17010202	Stony Creek	46.33828	-113.62765	46.33828	-113.62765	F	
17010202	Tin Cup Joe Creek	46.38581	-112.89563	46.38581	-112.89563	F	
17010202	Trout Creek	46.21670	-113.37675	46.21670	-113.37675	F	

17010202	Upper Willow Creek	46.41119	-113.50617	46.41119	-113.50617	A	A
17010202	Upper Willow Creek	46.36704	-113.49913	46.36704	-113.49913	B	**B**
17010202	Upper Willow Creek	46.51190	-113.50991	46.51190	-113.50991	F	
17010202	West Fork Gold Creek	47.02147	-113.77726	46.57458	-113.65663	F	
17010202	West Fork Rock Creek	46.19160	-113.70210	46.19160	-113.70210	D	
17010202	West Fork Rock Creek	46.19348	-113.70742	46.19348	-113.70742	D	
17010202	West Fork Rock Creek	46.19816	-113.74045	46.19816	-113.74045	F	
17010202	West Fork Rock Creek	46.20057	-113.73115	46.20057	-113.73115	F	
17010202	West Fork Rock Creek	46.20165	-113.70170	46.20165	-113.70170	A	A
17010202	West Fork Rock Creek	46.21269	-113.69693	46.21269	-113.69693		F
17010202	West Fork Rock Creek	46.21278	-113.70087	46.21278	-113.70087	C	A
17010202	North Fork Rock Creek	46.21305	-113.69770	46.21305	-113.69770		F
17010202	Wisconsin Creek	45.59850	-113.34226	45.59850	-113.34226	F	
17010203	Arrastra Creek	46.94601	-112.90140	46.94601	-112.90140	F	
17010203	Arrastra Creek	46.94628	-112.90392	46.94628	-112.90392	F	
17010203	Blackfoot River	46.93327	-113.11469	46.93327	-113.11469	C	C
17010203	Blackfoot River	46.94203	-112.94815	46.94203	-112.94815	D	C
17010203	Blackfoot River	46.89972	-113.75623	46.89972	-113.75623	F	
17010203	Blackfoot River	46.91716	-113.01432	46.91716	-113.01432	F	
17010203	Blackfoot River	46.91872	-113.01542	46.91872	-113.01542	F	
17010203	Blackfoot River	46.93635	-112.77166	46.93758	-112.77656	F	
17010203	Blackfoot River	46.94937	-112.63248	46.94937	-112.63248	F	
17010203	Blackfoot River	46.95305	-112.60509	46.95305	-112.60509	F	
17010203	Blackfoot River	47.01341	-112.45411	47.01341	-112.45411	F	
17010203	Buffalo Gulch	46.80307	-112.76947	46.80307	-112.76947	D	X
17010203	Clearwater River	46.96448	-113.37910	46.96448	-113.37910	D	D
17010203	Clearwater River	47.00088	-113.38251	47.00088	-113.38251	F	
17010203	Clearwater River	47.01927	-113.38567	47.01927	-113.38567	F	
17010203	Clearwater River	47.10762	-113.43799	47.10762	-113.43799	F	
17010203	Clearwater River	47.10954	-113.44013	47.10954	-113.44013	F	
17010203	Clearwater River	47.11111	-113.43914	47.11111	-113.43914	F	
17010203	Clearwater River	47.11196	-113.43773	47.11196	-113.43773	F	
17010203	Clearwater River	47.11539	-113.44242	47.11539	-113.44242	C	C
17010203	Clearwater River	47.11602	-113.44477	47.11602	-113.44477	C	C
17010203	Clearwater River	47.11993	-113.44790	47.11993	-113.44790	F	
17010203	Clearwater River	47.12185	-113.44941	47.12185	-113.44941	F	
17010203	Clearwater River	47.16471	-113.49012	47.16471	-113.49012	F	
17010203	Clearwater River	47.22230	-113.53635	47.22230	-113.53635	B	B
17010203	Clearwater River	47.22252	-113.53455	47.22252	-113.53455	B	C
17010203	Clearwater River	47.22269	-113.53553	47.22269	-113.53553	B	B
17010203	Clearwater River	47.22321	-113.53679	47.22321	-113.53679	A	B
17010203	Clearwater River	47.22398	-113.53621	47.22398	-113.53621	A	B
17010203	Clearwater River	47.22556	-113.53704	47.22556	-113.53704	A	B

17010203	Clearwater River	47.22758	-113.53673	47.22758	-113.53673	B	B
17010203	Clearwater River	47.23579	-113.53827	47.23579	-113.53827	A	B
17010203	Clearwater River	47.23619	-113.53933	47.23619	-113.53933	F	
17010203	Clearwater River	47.24316	-113.54218	47.24316	-113.54218	C	C
17010203	Clearwater River	47.24791	-113.54636	47.24791	-113.54636	B	B
17010203	Clearwater River	47.25203	-113.58281	47.25203	-113.58281	F	
17010203	Clearwater River	47.29856	-113.57801	47.29856	-113.57801	F	
17010203	Clearwater River	47.29912	-113.57784	47.29912	-113.57784	F	
17010203	Clearwater River	47.33348	-113.59690	47.33348	-113.59690	D	D
17010203	Clearwater River	47.33496	-113.59793	47.33496	-113.59793	F	
17010203	Clearwater River	47.34721	-113.58726	47.34721	-113.58726	F	
17010203	Clearwater River	47.35230	-113.58255	47.35230	-113.58255	F	
17010203	Colt Creek	47.32610	-113.59731	47.32610	-113.59731	D	D
17010203	Copper Creek	47.07877	-112.61807	47.07877	-112.61807	F	
17010203	Cottonwood Creek	46.86075	-112.98865	46.86075	-112.98865	F	
17010203	Cottonwood Creek	47.03075	-113.27275	47.03075	-113.27275	F	
17010203	Cottonwood Creek	47.03075	-113.27275	47.03075	-113.27275	F	
17010203	Cottonwood Creek	47.03075	-113.27275	47.03075	-113.27275	F	
17010203	Cottonwood Creek	47.03691	-113.26123	47.03691	-113.26123	F	
17010203	Cottonwood Creek	47.05053	-113.27153	47.05053	-113.27153	F	
17010203	Cottonwood Creek	47.05063	-113.27162	47.05063	-113.27162	F	
17010203	Cottonwood Creek	47.05200	-113.27228	47.05200	-113.27228	F	
17010203	Cottonwood Creek	47.06640	-113.26408	47.06640	-113.26408	F	
17010203	Cottonwood Creek	47.06932	-113.26540	47.06932	-113.26540	F	
17010203	Cottonwood Creek	47.07723	-113.25961	47.07723	-113.25961	F	
17010203	Cottonwood Creek	47.09462	-113.29182	47.09462	-113.29182	F	
17010203	Cottonwood Creek	47.09701	-113.29578	47.09701	-113.29578	F	
17010203	Deer Creek	47.21022	-113.54196	47.21022	-113.54196	F	
17010203	Douglas Creek	46.86053	-113.00547	46.86053	-113.00547	F	
17010203	East Fork Clearwater Creek	47.35994	-113.56518	47.35994	-113.56518	F	
17010203	Marshall Creek	47.28830	-113.62739	47.28830	-113.62739	B	B
17010203	Marshall Creek	47.29009	-113.63799	47.29009	-113.63799	B	B
17010203	Monture Creek	47.02631	-113.25589	47.02631	-113.25589	B	D
17010203	Monture Creek	47.03859	-113.21947	47.03859	-113.21947	D	X
17010203	Monture Creek	47.03767	-113.22010	47.03767	-113.22010	F	F
17010203	Morrell Creek	47.15962	-113.46703	47.15962	-113.46703	F	
17010203	Nevada Creek	46.83218	-112.89674	46.83218	-112.89674	C	X
17010203	Nevada Creek	46.78412	-112.77719	46.78412	-112.77719	D	D
17010203	Nevada Creek	46.75822	-112.70388	46.75822	-112.70388	H	
17010203	Nevada Creek	46.75842	-112.70247	46.75842	-112.70247	H	
17010203	Nevada Creek	46.75853	-112.70369	46.75853	-112.70369	H	
17010203	Nevada Creek	46.76487	-112.63307	46.76487	-112.63307	H	
17010203	Nevada Creek	46.80941	-112.83030	46.80941	-112.83030	H	

17010203	Owl Creek	47.11505	-113.47259	47.11505	-113.47259	D	D
17010203	Owl Creek	47.11600	-113.45740	47.11600	-113.45740	D	D
17010203	Owl Creek	47.11003	-113.49761	47.11003	-113.49761	F	
17010203	Placid Creek	47.14449	-113.59539	47.14449	-113.59539	F	
17010203	Sauerkraut Creek	46.92039	-112.75839	46.92039	-112.75839	C	C
17010203	Sauerkraut Creek	46.93430	-112.76672	46.93430	-112.76672	C	C
17010203	Sauerkraut Creek	46.91637	-112.75499	46.91637	-112.75499	D	C
17010203	Seeley Creek	47.21052	-113.45428	47.21052	-113.45428	F	
17010203	Shanley Creek	47.07700	-113.25124	47.07700	-113.25124	F	
17010203	Shanley Creek	47.09708	-113.22614	47.09708	-113.22614	F	
17010203	Wales Creek	46.90270	-113.17690	46.90270	-113.17690	A	A
17010203	West Fork Clearwater River	47.30364	-113.60519	47.30364	-113.60519	B	B
17010203	West Fork Clearwater River	47.25432	-113.55446	47.25432	-113.55446	C	C
17010203	West Fork Clearwater River	47.25224	-113.58344	47.25224	-113.58344	F	
17010203	Willow Creek	46.90181	-112.72081	46.89910	-112.72125	F	
17010203	Willow Creek	46.98611	-112.39014	46.98611	-112.39014	F	
17010204	Butler Creek	47.12561	-114.43692	47.12561	-114.43692	F	
17010204	Clark Fork River	46.66121	-113.14857	46.66121	-113.14857	H	
17010204	Clark Fork River	46.87425	-114.06660	46.87425	-114.06660	H	
17010204	Clark Fork River	46.88258	-113.93120	46.88258	-113.93120	H	
17010204	Clark Fork River	46.91757	-114.20808	46.91757	-114.20808	H	
17010204	Clark Fork River	47.02327	-114.33588	47.02327	-114.33588	H	
17010204	Clark Fork River	47.02810	-114.39460	47.02810	-114.39460	H	
17010204	Clark Fork River	47.19611	-114.89019	47.19611	-114.89019	H	
17010204	Clark Fork River	47.29611	-115.09028	47.29611	-115.09028	H	
17010204	Clark Fork River	47.35580	-114.78333	47.35580	-114.78333	H	
17010204	Coyle Creek	47.25786	-115.27180	47.25786	-115.27180	F	
17010204	Deep Creek	46.79803	-113.29928	46.79803	-113.29928	F	
17010204	Deep Creek	46.79813	-113.29884	46.79813	-113.29884	F	
17010204	East Fork Big Creek	47.29391	-115.45517	47.29391	-115.45517	F	
17010204	East Fork Big Creek	47.30211	-115.45261	47.30211	-115.45261	F	
17010204	East Fork Burnt Creek	47.22985	-114.61612	47.22985	-114.61612	F	
17010204	Hoodoo Creek	46.98697	-115.01195	46.98697	-115.01195	F	
17010204	Kennedy Creek	47.16473	-114.42344	47.16473	-114.42344	F	
17010204	Lake Creek	46.98804	-114.99716	46.98804	-114.99716	F	
17010204	Lodgepole Creek	47.31766	-115.44801	47.31766	-115.44801	F	
17010204	Lodgepole Creek trib	47.31109	-115.43465	47.31109	-115.43465	F	
17010204	McCormick Creek	47.15250	-114.48667	47.15250	-114.48667	F	
17010204	Ninemile Creek	47.11618	-114.50076	47.11618	-114.50076	D	X
17010204	Ninemile Creek	47.03764	-114.39330	47.03764	-114.39330	F	
17010204	Ninemile Creek	47.08151	-114.43902	47.08151	-114.43902	F	
17010204	Ninemile Creek	47.08190	-114.43920	47.08190	-114.43920	F	

17010204	Ninemile Creek	47.16500	-114.55780	47.16500	-114.55780	F	
17010204	North Fork Second Creek	47.16404	-114.71135	47.16404	-114.71135	F	
17010204	Soldier Creek	47.22214	-114.59896	47.22214	-114.59896	F	
17010204	South Fork Trout Creek below Heart Lake	46.95398	-114.96809	46.95398	-114.96809	F	
17010204	Spruce Creek	47.31486	-115.48841	47.31486	-115.48841	F	
17010204	Stony Creek	47.07278	-114.42806	47.07278	-114.42806	F	
17010204	Stony Creek	47.10939	-114.39593	47.10939	-114.39593	F	
17010204	Tenmile Creek	46.76196	-113.36937	46.76196	-113.36937	F	
17010204	Tenmile Creek	46.76221	-113.37038	46.76221	-113.37038	F	
17010204	trib to McCormick Creek	47.17323	-114.42976	47.17323	-114.42976	F	
17010204	Trout Creek	47.04462	-114.95147	47.04462	-114.95147	F	
17010204	Unnamed trib to Lodgepole Creek	47.31589	-115.43356	47.31589	-115.43356	F	
17010204	Unnamed trib to McKinney Creek	47.32606	-115.42636	47.32606	-115.42636	F	
17010204	Van Ness Creek	47.08209	-114.93553	47.08209	-114.93553	F	
17010204	Windfall Creek	47.03820	-114.92846	47.03820	-114.92846	F	
17010205	Ambrose Creek	46.32306	-113.54037	46.32306	-113.54037	F	
17010205	Ambrose Creek	46.32344	-113.55051	46.32344	-113.55051	F	
17010205	Bitteroot River	46.72191	-114.04672	46.72191	-114.04672	F	
17010205	Bitteroot River	46.75465	-114.06207	46.75465	-114.06207	F	
17010205	Bitterroot River	46.00901	-114.09854	46.00901	-114.09854	C	C
17010205	Bitterroot River	45.98253	-114.15110	45.98253	-114.15110	F	
17010205	Bitterroot River	46.35000	-114.04120	46.35000	-114.04120	F	
17010205	Bitterroot River	46.52085	-114.10860	46.52085	-114.10860	F	
17010205	Bitterroot River	46.56785	-114.09166	46.56785	-114.09166	F	
17010205	Bitterroot River	46.58230	-114.06271	46.58230	-114.06271	F	
17010205	Bitterroot River	46.58520	-114.06706	46.58520	-114.06706	F	
17010205	Bitterroot River	46.83753	-114.10500	46.83753	-114.10500	D	D
17010205	Bitterroot River	46.85225	-114.10003	46.85225	-114.10003	F	
17010205	Burnt Fork Bitterroot River	46.23459	-113.54072	46.23459	-113.54072	F	
17010205	Burnt Fork Bitterroot River	46.24244	-113.54135	46.24244	-113.54135	F	
17010205	Burnt Fork Bitterroot River	46.38484	-113.86330	46.38484	-113.86330	F	
17010205	Cameron Creek	45.53401	-113.57242	45.53401	-113.57242	B	NA
17010205	Cameron Creek	45.50171	-113.58545	45.50171	-113.58545	C	NA
17010205	Daly Creek trib	46.23273	-113.84638	46.23273	-113.84638	F	
17010205	Deer Creek	45.58947	-114.34072	45.58947	-114.34072	F	
17010205	East Fork Bitterroot River	45.85906	-114.02213	45.85334	-114.01938	D	NA

17010205	East Fork Bitterroot River	45.86083	-114.02809	45.86083	-114.02809	D	NA
17010205	East Fork Bitterroot River	45.86590	-113.87118	45.86590	-113.87118	F	
17010205	Gilbert Creek	45.51491	-114.04399	45.51491	-114.04399	F	
17010205	Gold Creek	46.23399	-113.54066	46.23399	-113.54066	F	
17010205	Laird Creek	45.51390	-114.04086	45.51390	-114.04086	F	
17010205	Little Sleeping Child Creek	46.07594	-114.07321	46.07594	-114.07321	B	NA
17010205	Little Sleeping Child Creek	46.12450	-114.12697	46.12450	-114.12697	C	NA
17010205	Little Sleeping Child Creek	46.06138	-114.06039	46.06138	-114.06039	F	
17010205	Lodgepole Creek	45.50289	-113.48788	45.50289	-113.48788	F	
17010205	Lolo Creek	46.74326	-114.15562	46.74326	-114.15562	F	
17010205	Lolo Creek	46.74340	-114.15599	46.74340	-114.15599	F	
17010205	Lolo Creek	46.76618	-114.34048	46.76618	-114.34048	F	
17010205	Lolo Creek trib	46.63892	-114.58026	46.63892	-114.58026	F	
17010205	Lost Horse Creek	46.06030	-114.15307	46.06030	-114.15307	F	
17010205	McCalla Creek	46.51403	-114.11837	46.51403	-114.11837	F	
17010205	Meadow Creek	45.49759	-113.48106	45.49759	-113.48106	F	
17010205	Meadow Creek	45.51124	-113.49237	45.51124	-113.49237	F	
17010205	Meadow Creek	45.51959	-113.48256	45.51959	-113.48256	F	
17010205	Mormon Creek	46.71799	-114.14264	46.71799	-114.14264	F	
17010205	Mormon Creek trib	46.72103	-114.22024	46.72103	-114.22024	F	
17010205	Nez Perce Creek	45.46270	-114.20119	45.46270	-114.20119	F	
17010205	Obrien Creek	46.85126	-114.17085	46.85126	-114.17085	F	
17010205	Rye Creek	45.97678	-114.01243	45.97678	-114.01243	F	
17010205	Sawmill Creek	46.26506	-113.54140	46.26506	-113.54140	F	
17010205	Skalkaho Creek	46.09315	-113.57514	46.09315	-113.57514	F	
17010205	Skalkaho Creek	46.09433	-113.57048	46.09433	-113.57048	F	
17010205	Slate Creek	45.69782	-114.28660	45.69782	-114.28660	F	
17010205	Sleeping Child Creek	46.07483	-114.02524	46.07483	-114.02524	F	
17010205	Sleeping Child Creek	46.07559	-114.03288	46.07559	-114.03288	F	
17010205	Sleeping Child Creek	46.08072	-114.04032	46.08072	-114.04032	F	
17010205	Swift Creek	45.53298	-113.45964	45.53298	-113.45964	F	
17010205	Threemile Creek	46.36460	-113.52502	46.36460	-113.52502	F	
17010205	Threemile Creek	46.37162	-113.54498	46.37162	-113.54498	F	
17010205	Two Bear Creek	46.06433	-114.00292	46.06433	-114.00292	F	
17010205	Warm Springs Creek	45.49438	-114.03809	45.49438	-114.03809	F	
17010205	West Fork Bitterroot River	45.82698	-114.23339	45.82698	-114.23339	D	NA
17010205	West Fork Bitterroot River	45.37498	-114.18149	45.37498	-114.18149	F	
17010205	West Fork Bitterroot River	45.48881	-114.33167	45.48881	-114.33167	F	

17010205	West Fork Bitterroot River	45.59342	-114.32278	45.59342	-114.32278	F	
17010205	West Fork Bitterroot River	45.62165	-114.30388	45.62165	-114.30388	F	
17010205	West Fork Bitterroot River	45.62169	-114.30546	45.62169	-114.30546	F	
17010205	West Fork Bitterroot River	45.62424	-114.30359	45.62424	-114.30359	F	
17010205	West Fork Bitterroot River	45.62509	-114.30269	45.62509	-114.30269	F	
17010205	West Fork Bitterroot River	45.66772	-114.30425	45.66772	-114.30425	F	
17010205	West Fork Bitterroot River	45.76585	-114.28195	45.76893	-114.28164	F	
17010205	West Fork Bitterroot River	45.80501	-114.26225	45.80501	-114.26225	F	
17010205	West Fork Bitterroot River	45.81490	-114.25336	45.81490	-114.25336	F	
17010205	West Fork Bitterroot River	45.92777	-114.13366	45.92777	-114.13366	F	
17010205	West Fork Bitterroot River	45.92963	-114.13321	45.92963	-114.13321	F	
17010205	West Fork Bitterroot River	45.93132	-114.13190	45.93132	-114.13190	F	
17010205	West Fork Camp Creek	45.45229	-113.56563	45.45229	-113.56563	F	
17010205	West Fork Lolo Creek	46.64400	-114.58060	46.64400	-114.58060	F	
17010205	West Fork Lolo Creek	46.68550	-114.55800	46.68550	-114.55800	F	
17010205	Willow Creek	46.17313	-113.56394	46.17313	-113.56394	F	
17010205	Willow Creek	46.17367	-113.57517	46.17367	-113.57517	F	
17010206	Griffin Creek	48.28140	-114.76336	48.28140	-114.76336	F	
17010206	Griffin Creek	48.28140	-114.76336	48.28140	-114.76336	F	
17010206	North Fork Flathead River	48.83676	-114.34407	48.83676	-114.34407	F	F
17010206	North Fork Flathead River	48.83676	-114.34407	48.83676	-114.34407	F	F
17010207	Schafer Creek	48.06390	-113.24530	48.06390	-113.24530	F	
17010207	Tunnel Creek	48.35910	-113.67960	48.35910	-113.67960	F	
17010208	Ashley Creek	48.09517	-114.55178	48.09517	-114.55178	D	D
17010209	Stony Creek	47.90656	-113.57200	47.90656	-113.57200	F	
17010211	Beaver Creek	47.38793	-113.66017	47.38793	-113.66017	F	
17010211	Glacier Creek	47.52780	-113.72174	47.52780	-113.72174	F	
17010211	Smith Creek	47.58575	-113.73970	47.58575	-113.73970	F	
17010211	Smith Creek trib	47.55184	-113.69573	47.55184	-113.69573	F	
17010211	Swan River	47.42133	-113.67009	47.42133	-113.67009	F	
17010211	Swan River	47.46212	-113.68450	47.46212	-113.68450	F	
17010211	Swan River	47.52750	-113.71371	47.52750	-113.71371	F	
17010211	Swan River	47.58343	-113.75767	47.58343	-113.75767	F	

17010211	Swan River	47.62986	-113.78781	47.62986	-113.78781	F	
17010211	Swan River	47.67305	-113.80998	47.67305	-113.80998	F	
17010211	Swan River	48.82479	-114.52056	48.82479	-114.52056	F	
17010211	Swan River trib	47.52626	-113.71267	47.52626	-113.71267	F	
17010213	Big Cherry Creek	48.24687	-115.54945	48.24687	-115.54945	F	
17010213	Bull River	48.10509	-115.77752	48.10509	-115.77752	E	X
17010213	Bull River	48.04375	-115.84002	48.04375	-115.84002	D	X
17010213	Bull River	48.13600	-115.86681	48.13600	-115.86681	D	X
17010213	Bull River	48.10509	-115.77752	48.10509	-115.77752	F	F
17010213	Chilly Creek	47.78800	-115.29654	47.78800	-115.29654	F	
17010213	Clark Fork River, at state park	47.61638	-115.38979	47.61638	-115.38979	F	
17010213	Cold Creek	47.79999	-115.29596	47.79999	-115.29596	F	
17010213	Dry Creek	47.58545	-115.35644	47.58545	-115.35644	F	
17010213	Dry Creek Trib Thompson Falls	47.47275	-115.26433	47.47275	-115.26433	F	
17010213	Dry Creek Trib Thompson Falls	47.47849	-115.25275	47.47849	-115.25275	F	
17010213	East Fork Dry Creek	47.48649	-115.27064	47.48649	-115.27064	F	
17010213	East Fork Dry Creek	47.55202	-115.37578	47.55202	-115.37578	F	
17010213	Freezeout Creek	47.77319	-115.29857	47.77319	-115.29857	F	
17010213	Graves Creek	47.71432	-115.38213	47.71432	-115.38213	F	
17010213	Graves Creek Trib	47.75041	-115.29597	47.75041	-115.29597	F	
17010213	Little Thompson River	47.72935	-115.02843	47.72935	-115.02843		F
17010213	Little Thompson River	47.69570	-114.81110	47.69570	-114.81110	C	C
17010213	Little Thompson River	47.68608	-114.99834	47.68481	-114.99477	F	F
17010213	Little Thompson River	47.71021	-115.01349	47.68608	-115.01349	F	F
17010213	McGinnus Creek	47.96296	-115.21727	47.96296	-115.21727	F	
17010213	McGinnus Creek lower dam pond	48.02557	-115.24224	48.02557	-115.24224	F	
17010213	Middle Fork Bull River	48.19341	-115.81562	48.19341	-115.81562	F	
17010213	Miller Creek	47.82482	-115.30052	47.82482	-115.30052	F	
17010213	Miller Lake	47.92495	-115.27954	47.92495	-115.27954	F	
17010213	Mudd Creek	47.66097	-114.97547	47.66097	-114.97547	F	
17010213	North Fork Bull River	48.19657	-115.81025	48.19657	-115.81025	F	F
17010213	Pilgrim Creek	47.99571	-115.76427	47.99571	-115.76427	D	X
17010213	Pilgrim Creek	47.99421	-115.76759	47.99286	-115.76864	F	F
17010213	Sylvan Lake	47.91595	-115.27975	47.91595	-115.27975	F	
17010213	Thompson River	47.92030	-115.00187	47.92030	-115.00187	B	C
17010213	Thompson River	47.92114	-115.00069	47.92114	-115.00069	B	C
17010213	Thompson River	47.73972	-115.01519	47.73972	-115.01519	C	D
17010213	Thompson River	47.78402	-115.00818	47.78402	-115.00818	C	D
17010213	Thompson River	47.91048	-115.04959	47.91048	-115.04959	C	C
17010213	Thompson River	47.73879	-115.01564	47.73879	-115.01564	D	D

17010213	Thompson River	47.91160	-115.04247	47.91160	-115.04247	D	D
17010213	Thompson River	47.58890	-115.23234	47.58890	-115.23234	F	F
17010213	Thompson River	47.60757	-115.20541	47.60757	-115.20541	F	F
17010213	Thompson River	47.63075	-115.17600	47.63075	-115.17600	F	F
17010213	Thompson River	47.73887	-115.01690	47.73887	-115.01690	F	F
17010213	Thompson River	47.86160	-115.00150	47.86317	-115.00162	F	F
17010213	Thompson River	47.90018	-115.04764	47.90018	-115.04764	F	F
17010213	Thompson River	47.90153	-115.04971	47.90153	-115.04971	F	F
17010213	Thompson River	47.94109	-114.97532	47.94109	-114.97532	F	F
17010213	Twelvemile Creek	47.40879	-115.25438	47.40879	-115.25438	F	
17010213	Twelvemile Creek	47.47168	-115.27621	47.47168	-115.27621	F	
17010213	Vermillion River	47.80734	-115.30029	47.80734	-115.30029	F	
17010213	Vermillion River	47.81715	-115.29924	47.81715	-115.29924	F	
17010213	Vermillion River	47.84757	-115.30053	47.84757	-115.30053	F	
17010213	West Fork Thompson River	47.65791	-115.18706	47.65791	-115.18706	F	
17010213	West Fork Thompson River trib	47.65957	-115.21176	47.65957	-115.21176	F	
17010213	Willow Creek trib to Vermillion	47.87138	-115.31018	47.87138	-115.31018	F	
17010213	Willow Creek trib to Vermillion	47.87516	-115.30041	47.87516	-115.30041	F	
					Totals	**153**	**122**

Appendix B. Nature Serve Conservation Rank Model

Western Pearlshell (*Margaritifera falcata*)
Reviewer = Dave Stagliano 1/10/2015

Population Size
H = >1,000,000 individuals

Area of Occupancy
LD = 200-1,000 km (about 125-620 miles)

Long-term Trend
Populations and occupancy have been impacted by mining impacts (all of Clark Fork mainstem, Flint Creek, Blackfoot, Nine Mile Creek, Fisher River), warming water temperatures, dams, loss of host fish species, and some dewatering (all of the Beaverhead, Jefferson, Smith, lower Gallatin, Missouri mainstem).
C = Substantial Decline (decline of 50-75%)

Short-term Trend
Mussel surveys conducted since 2004 suggests a moderate (20-30%) decline in most metrics analyzed. From the 2014 revisits, 19 streams (25%) are now considered to be extirpated (X), 19% of populations have declined, 26% of streams experienced loses, 27% decline of individuals (Stagliano 2015). But we also added important viable population extensions of ~30 km that have added significant numbers of individuals in 2014.
D = Declining. Decline of 10-30% in population, range, area occupied, and/or number or condition of occurrences

Threats
Agriculture, mining impacts, overgrazing of riparian habitats, dams, loss of native host species and introduced salmonid species all represent threats.
Severity = Moderate: Major reduction of species population or long-term degradation or reduction of habitat in Montana, requiring 50-100 years for recovery.

Scope = Moderate: 20-60% of total population or area affected. Cattle grazing probably threatens this species in 20% of its Montana Range. Loss of host fish species probably affects about 90-100% of their populations, but there is host fish swapping.
High: Threat is operational (happening now) or imminent (within a year).

B = Moderate to severe, imminent threat for a significant proportion (20-60%) of population, occurrences, or area

Intrinsic Vulnerability
A = Highly Vulnerable. Species is slow to mature, reproduces infrequently, and/or has low fecundity such that populations are very slow (> 20 years or 5 generations) to recover from decreases in abundance; or species has low dispersal capability such that extirpated populations are unlikely to become reestablished through natural recolonization (unaided by humans).

Environmental Specificity
A = Very Narrow. Specialist. Specific habitat(s), substrate(s), food type(s), hosts, breeding/nonbreeding microhabitats, or other abiotic and/or biotic factor(s) are used or required by the Element in the area of interest, with these habitat(s) and/or other requirements furthermore being scarce within the generalized range of the species within the area of interest, and, the population (or the number of breeding attempts) expected to decline significantly if any of these key requirements become unavailable.

Current S Rank: **S2**

Step 3: 3.5 - (+0.5-0.5) = 3.5
Step 4: 3.5 + (Trends -0.5) + (Intrinsic Vulnerability -0.5) = **2.5** or if we use 3.5 + (Trends -0.5) + (Threats -0.75) = **2.25**

Raw Score
2.5 Points (P) = **$1.5 < P \leq 2.5$ results in an S2.**
2.25 Points (P) = **$1.5 < P \leq 2.5$ results in an S2.**

Proposed Rank
S2. Keep on the Species of Concern List.

Appendix C. Field Photographs

Photo 1. Smith River near Fort Logan looking upstream.

Photo 2. WEPE remnants of the Smith River extirpated (X) populations.

Photo 3. Sheep Creek upstream of Black Butte Tintina Mine.

Photo 4. Sheep Creek negative mussel surveys (F).

Photo 5. French Creek lower in the Big Hole Basin.

Photo 6. WEPE mussels from a B-Viability group in Deep Creek of the Big Hole Basin.

Photo 7. Marshall Creek, home to A and B viable populations

Photo 8. Clearwater River, home to one of the largest WEPE populations in the state.

Photo 9. Yaak River reach with miles of A & B viable WEPE populations.

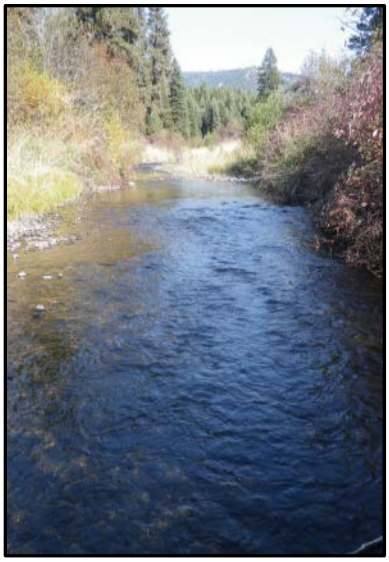

Photo 10. Pleasant Valley Fisher River, new B population.

Photo 11. Evidence of recent (8-12 years) reproduction (~30mm) in Wolf Creek in the Fisher River Basin.

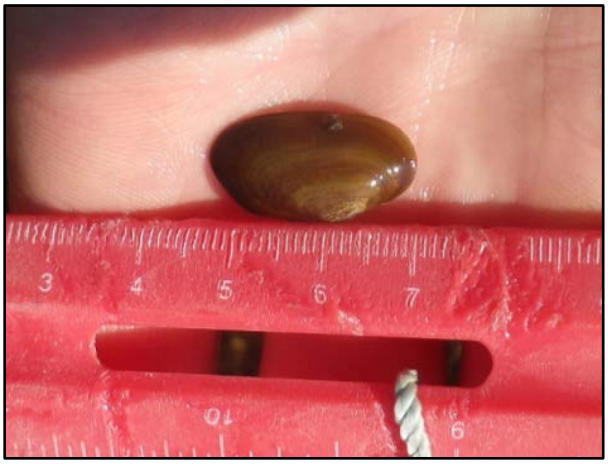

Photo 12. Evidence of very recent (<5 years) reproduction (<25mm) in Pleasant Valley Fisher River.